

# 3D WORLD

THE MAGAZINE FOR 3D ARTISTS

THE ARTIST'S GUIDE

## ZBrush

Exclusive new modelling  
tutorials by 3D legends  
Meats Meier and Zack Petroc

## 3DS MAYA?

Will your favourite 3D package  
survive the Autodesk/Alias buyout?

### ANALYSIS

Why movie tie-ins hold the key  
to next-generation game design



CAN DISNEY BREAK INTO 3D?  
THE MAKING OF DOOM - THE MOVIE  
NEXT-GENERATION LIP-SYNCH TRICKS  
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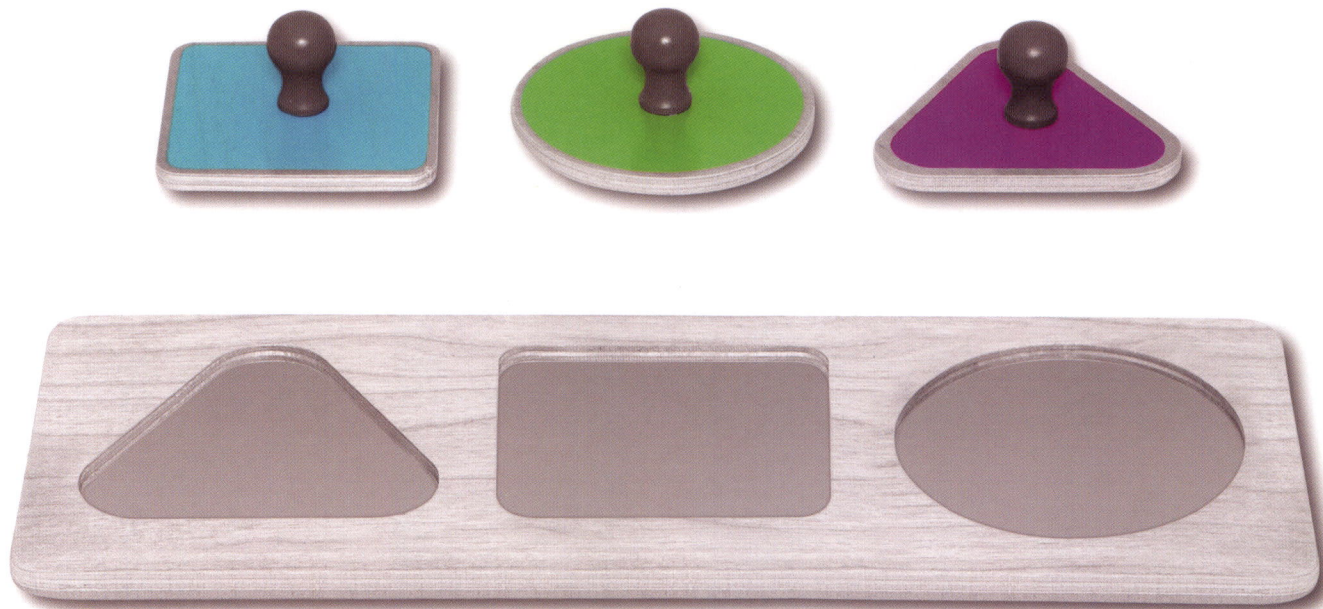
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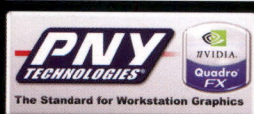


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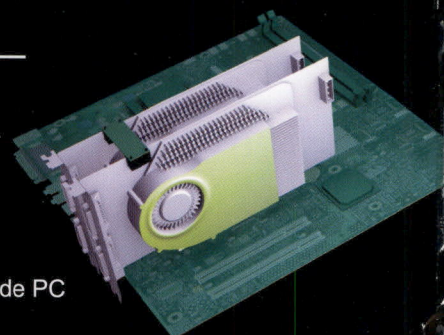
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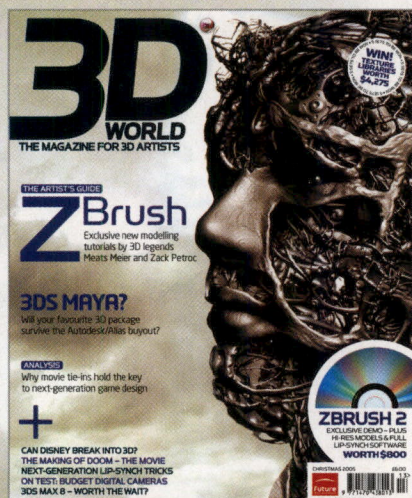
# Meats Meier

**AS AN ARTIST** in residence at the Gnomon Workshop, Meats Meier creates instructional DVDs and produces his own personal artwork. Meats has been a digital artist for more than 10 years and, during that time, he's done everything, from working on commercials to freelance illustration. He's also worked as a videogame artist, and as a compositor on feature films such as *Hellboy*.

You can see his artwork on the current box covers of *Maya 7* and *ZBrush 2*, as well as in countless magazines. Meats is also the author of the wildly popular Gnomon DVDs *Introduction to ZBrush* and *ZBrush Production Pipeline*.

In his Trade Secrets article on page 46, Meats explains how he creates signature imagery such as the image on the right using his own 'wire style' *ZBrush* modelling technique.  
[www.3dartspace.com](http://www.3dartspace.com)

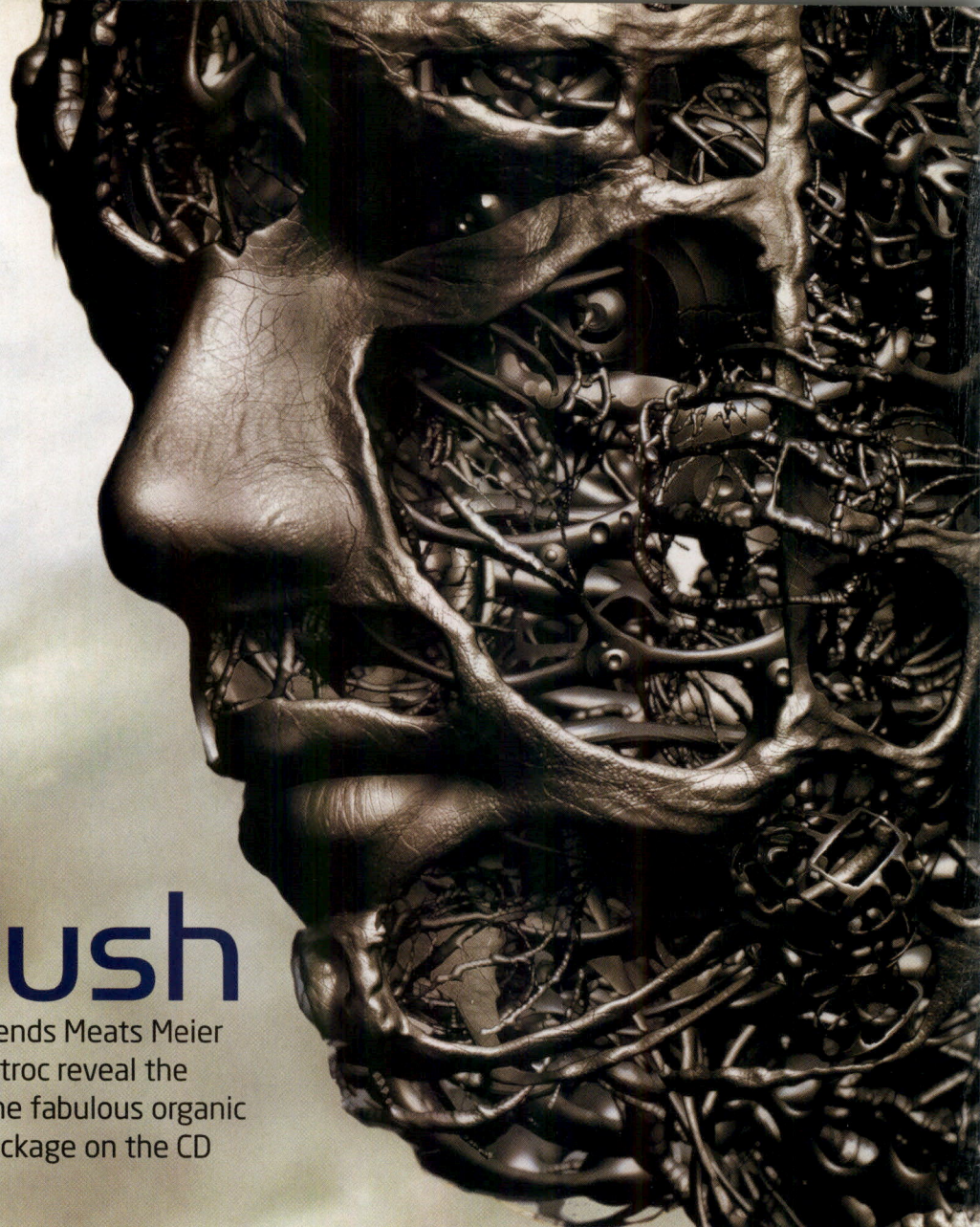




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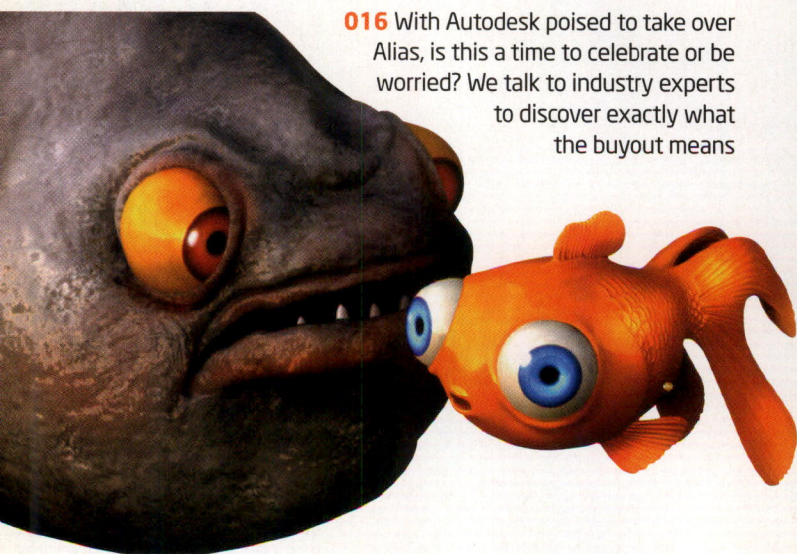
# ZBrush

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## PLAYING CHICKEN

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**European Representative,  
DreamWorks Animation**

Shelley Page started her career in feature animation as Backgrounds Supervisor on Disney's *Who Framed Roger Rabbit?* She was one of the first artists hired to form DreamWorks Animation in 1995. She's now DreamWorks' European Representative, resourcing new talent for the studio.

[www.dreamworks.com](http://www.dreamworks.com)

### JORDI BARES



**Senior 3D Animator, The Mill**

Jordi Bares worked for eight years in the games and film industries in his native Spain before moving to London in 2000, where he has freelanced at Jim Henson's Creature Shop and Passion Pictures. The winner of many awards, he was nominated for an Emmy for his work on the BBC documentary *Pyramid*.

[www.the-mill.com](http://www.the-mill.com)

### ANDREW DAFFY



**CGI Supervisor, House of Curves**

Andrew Daffy has worked in the CGI industry for ten years on projects that have accumulated over 30 awards. He was recently named one of Alias's *Maya Masters* for 2004. His new company, The House of Curves, will act as both a studio and a training school.

[www.thehouseofcurves.com](http://www.thehouseofcurves.com)

### ALEX MORRIS



**Director, Hayes Davidson**

Alex Morris qualified as an architect in 1990 and joined the architectural visualisation agency Hayes Davidson in 1996, having completed over 40 buildings across a number of sectors. He is responsible for many of HD's landmark images, including the UK's Millennium Dome and the Tate Modern art gallery.

[www.hayesdavidson.com](http://www.hayesdavidson.com)

### JOLYON WEBB



**Principal Artist, Codemasters Software Company**

Jolyon Webb moved into developing game art after years as a freelance illustrator. He works at leading videogame studio Codemasters as Principal Artist in the Central Technology Group, which is the company's internal research and development team.

[www.codemasters.co.uk](http://www.codemasters.co.uk)

### AARDMAN ANIMATIONS

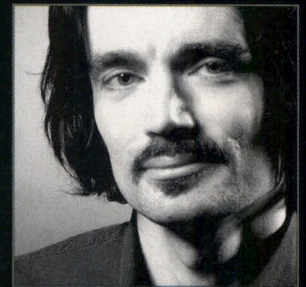


**Scott Pleydell-Pearce, Bobby Proctor and Stefan Marjoram**

Respectively CGI Animation Head of Department, CGI Lighting/Technical Head of Department and a Creative Director for the commercials department, Scott, Bobby and Stefan have over 20 years' combined experience at Aardman, working on a range of award-winning ads, idents and short films.

[www.aardman.com](http://www.aardman.com)

## Editor's perspective



Assuming that you haven't been living under a rock for the past four weeks, it may have come to your attention that Autodesk recently signed an agreement to acquire another little 3D company by the name of ... now, what was it again? Allied? Alienated? Alarmed? Okay, so it's not really a joking matter. On 4 October 2005, Autodesk and Alias announced their intention for the former to buy the latter, and unless anyone who oversees monopolies and mergers sees fit to disagree, that's precisely what will happen in six months' time.

The industry forums promptly went into meltdown. *Maya* users, for the most part, greeted the news with all of the enthusiasm of Chicken Little being informed that the skies above the farmyard are looking particularly heavy today; *3ds Max* users, in contrast, tended towards an attitude that, in Monty Python films, is usually signified by waving your hands on either side of your head, and informing your interlocuter that their father smelt of elderberries.

But while it would be tempting to see the buyout in terms of Machiavellian, *Max*-owning Autodesk acquiring defenceless, *Maya*-owning Alias in order to dispose of its rival package, the unfortunate truth is, if you're a games or visual effects artist, it's probably nothing personal. Autodesk makes most of its income from its CAD/CAM and architectural visualisation software; Alias happens to own the market-leading solution for automotive design, in the shape of its *StudioTools* product line. You do the maths.

However, even if Alias' animation software is, from Autodesk's point of view, simply the icing on the cake, running two separate product lines is going to pose something of a problem. Come next Siggraph, while it may be possible for the new super-Autodesk to claim that *3ds Max 9* represents the state of the art in CG software, it's going to be far harder to simultaneously claim the same thing about *Maya 8*.

Not that the alternatives look much more palatable. Leaving aside the difficulty of converging the two code bases to create the '3ds Maya' of our cover, to do so could be to create a single package with far less appeal than the sum of its parts. And while a few years ago, it would have been possible to focus *Maya* on the VFX and animation markets, and *3ds Max* on games and architecture, there are now enough *Maya*-using game developers to make such a solution politically difficult, to say the least.

So where does that leave you, the end user – or, indeed, you, the end user of a competing 3D software package? Until the buyout is completed, Autodesk and Alias are refusing to comment on the future of either product line, beyond assuring customers that it's business as usual; and no-one else is in possession of all the facts. But that isn't going to stop the rest of the industry from speculating. In our analysis piece, which starts on page 16, you can find out what it said. If you're serious about 3D, we think you may find that some of the comments make for very interesting reading.

**JIM THACKER** Editor  
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# LETTER OF THE MONTH

**G**reetings from hospital. I'm writing this just hours after getting out of the operating theatre, having had a cancerous prostate removed. But thanks to a morphine drip, I can sit upright and continue enjoying my issue of *3D World* magazine! I read the letter from Gazzamataz in issue 67 with interest, since it came from a fellow who was feeling over the hill at the relatively young age of 41. Pshaw! At 65, I tell everybody: 'Just do it! Things aren't getting any better - we're not getting any younger and bad things happen when you least expect it.

For example, also removed during this paid-for stay in hospital was any chance of my owning a copy of *Vue 5 Infinite*. (Although I have to admit that being dead also has certain drawbacks.) I've even become one of those annoying folks thumping the tub for early cancer testing. I mean, if it can kill Frank Zappa, we're all in harm's way. In my age bracket, everyone has something horrible and it just ain't funny any more. Hell, I'm into the third day of rendering a Bryce picture and hoping I'll live to see it finished.

CG is a young man's vocation, no doubt. But I think back to the 1960s when anyone with a camera became their own Roger Corman or Martin Scorsese. Today, the computer revolution enables anyone with enough RAM to do 'something', and usually something cool! I wouldn't give up going crazy in the 60s for anything, but I envy kids today with the tools and know-how to create the wonderful things brimming out of your magazine.

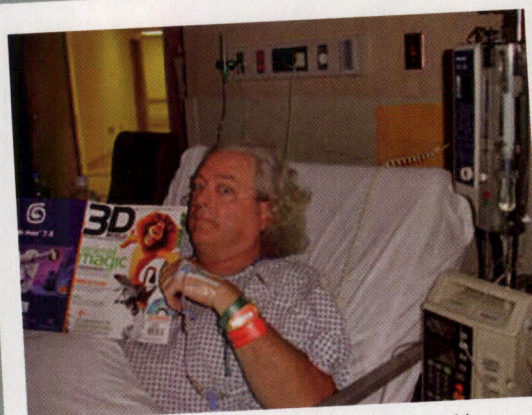
So, to everyone like Gazzamataz, I say this: If you want to be a 3D artist, just go for it, regardless of your age. In the end, you'll be sorry you didn't.

Alan White, Las Vegas

We can't argue with that. While we can't speed up your three-day render, we did mention your lost copy of *Vue 5 Infinite* to the product's developer, e-on software, who kindly volunteered to provide a single-user licence as a little 'get well' present. And while we're not certain that a copy of *Exposé 3* is a fair exchange for your prostate gland, we hope that your Letter of the Month prize at least gives you something else to read while you're in hospital.

## LETTER OF THE MONTH

Congratulations to Alan White, who wins a copy of *d'artiste: Character Modeling*, published by Ballistic Publishing. This authoritative book uncovers the techniques used by celebrated artists Steven Stahlberg, Pascal Blanché and Francisco A Cortina, through step-by-step tutorials, personal galleries, and collections of work from other invited artists. Further tutorials cover skin shading and creature modelling. [www.ballisticpublishing.com](http://www.ballisticpublishing.com)



● Alan White 'enjoys' a morphine drip while catching up with developments in the 3D industry from his hospital bed. We'd recommend that other readers stick with beer

## EERILY PERFECT

> While staring at the front cover of issue 70 trying to work out why the girl just doesn't look right, it suddenly hit me: she's perfect. Not a single blemish on her skin; perfect reflective eyes and perfect symmetrical bone structure.

In real life, people like that are few and far between. We see them perhaps once a week, and then only in magazines. But we see our friends and family every

single day, and how many of us have perfect-looking friends? Nobody seems to model and render normal people, or when they do, it's done in a caricatured or cartoon style. Perhaps modellers should start trying to make real-looking people, not people looking real.

Kieran Simpson, via email

We agree. But Olivier Ponsonnet's cover image appealed to us precisely because we felt that it possessed a slightly otherworldly quality in keeping with issue 70's lead article on next-gen virtual actors. Other readers were clearly thinking along the same lines, as the next letter indicates.

## THE UNCANNY VALLEY

> Reading about Masahiro Mori's concept of the 'uncanny valley' in issue 70, I was struck by how neatly the

● Olivier Ponsonnet's striking cover image from issue 70. But is this next-generation synthespian just too flawless to be truly believable, asks reader Kieran Simpson?

concept dovetailed into what Steven King wrote of as 'the mark of the beast'.

For those of you who haven't read *Danse Macabre*, King's take on the nature of horror fiction, the mark of the beast is the subconscious awareness that something is odd about someone else. In fiction, it's what makes the hero figure out that the preacher is untrustworthy long before he whips out the meat cleaver or transforms into a werewolf.

In the real world, our subconscious awareness of the oddness of others is what makes life so damn difficult for people with conditions such as autism or Tourette's Syndrome. Even when those people are basically doing nothing wrong, other people key off on their suppressed ticks or quirks, and tend to ostracise them as a result.

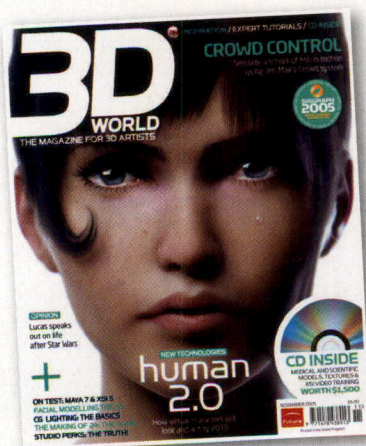
What does this have to do with computer graphics? A great deal. As Mori's 'uncanny valley' makes clear, people don't mind a character that doesn't pretend to be human, yet cannot abide one that's supposed to be

human, but it fails to convince. This is probably the reason why *Final Fantasy: The Spirits Within* failed so miserably at the box office. By the standards of animation, the characters were fantastic, but they were sufficiently real that they were no longer being judged by those standards. Instead, they were judged as real human beings. And as real human beings, they were wooden, stiff and ultimately unbelievable.

Graphics artists would do well to keep this example in mind when working on the next wave of 3D consoles. If you're not prepared to do absolutely everything necessary to achieve perfect photorealism, a deliberate 'cartoonish' approach may actually sell better.

Michael B English, Washington DC

Thanks for all your feedback on the cover image for issue 70, and on digital actors in general. This subject is now closed for correspondence, but you can continue to post your thoughts online on our forum: <http://forum.3dworldmag.com>





## WHERE'S THE WATER?

> Having read issue 69, I had a look to see what I could expect from *3D World* next month, and was pleased to see 'Water Works' advertised on the Next Issue page. I was really looking forward to some good advice on how to simulate fluids, produce decent ocean shaders, and so on. You can imagine my confusion when *3D World* 70 was titled 'Human 2.0'. I had to check it was the right issue and that I hadn't managed to miss one. Will there be a 'Water Works' issue? If not, could some part of it be squeezed into a future magazine?

Daniel Lloyd-Wood, via email

While the Next Issue page represents our best guess as to what your next copy of *3D World* will contain, those contents are subject to acts of God, movie distributors and, in this case, the magazine team. When issue 69 went to press, our next lead tutorial was indeed going to be on simulating water. However, in a 'wouldn't it be cool if ...' moment during an editorial meeting, we decided to add a shoal of fish to the scene, and to make this the focus of the article. The results can be seen in Pete Draper's 'Crowd Control' tutorial in issue 70. We'll try to return to the subject of fluid simulation in a future issue. In the meantime, coffee rations for the next editorial meeting will be decreased.

## ARTISTS WANTED

> I've just started work as Design Director for [well-known US science and technology title] *Popular Science*. In this role, I want to add some



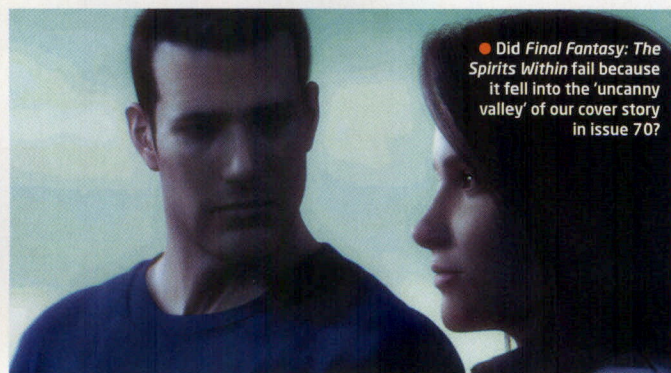
photorealistic illustrators and really good 3D modellers to our roster of freelance artists. I picked up a copy of your magazine to find some of these people and, sure enough, I did!

But I also had another thought, actually inspired by the Editor's Perspective column. One of the things I want our images to achieve is to make the fantastical future actually seem quite real and 'here and now'. That's where the 3D modellers come in. If any of your readers are doing strong work and would like to see it in print, I'd be grateful if you could put us in touch.

We don't have bags of cash, but we do pay for work. The real thing we have to offer is visibility. We have a circulation of about 1.5 million, and with copies often being passed on, about seven million people will see each issue.

Sam Syed, *Popular Science*

If you're an accomplished 3D artist with a preference for futuristic imagery, contact us at [3dworld@futurenet.co.uk](mailto:3dworld@futurenet.co.uk) and we'll pass your details on to Sam. You don't need to be a professional illustrator: Sam emphasises that he's interested in people whose work doesn't look like conventional scientific illustration. *Popular Science's* freelance rates range from \$350 for a spot image to \$1,200 for a full page.



● Did *Final Fantasy: The Spirits Within* fail because it fell into the 'uncanny valley' of our cover story in issue 70?

## T-SPLINES FOR MAYA 5

> I just received my copy of issue 70, and when I saw that a learning edition of *T-Splines* was on the CD, I got quite excited. I'd seen information about this modelling plug-in for *Maya* a while ago, but didn't know it was out, let alone that there was an LE version. On seeing the minimum requirements on the CD page, I turned on my PC with a view to trying it on my ageing copy of *Maya* 5. Unfortunately, when I loaded the CD, I found there was no *Maya* 5 installer on the disc. What happened to it?

Malcolm Kenworthy, via email

In a nutshell: it never existed. At the time, *T-Splines* was only compatible with *Maya* 6 and above, and our reference to *Maya* 5 was an unfortunate typo. However, we contacted the developer, who agreed to produce a version of the plug-in for users of older software. The Mac and Linux editions are still in development, but the Windows version can be downloaded at: [www.tsplines.com/resources/download.html](http://www.tsplines.com/resources/download.html). Our thanks go out to company CEO Matt Sederberg.

## FROM THE FORUM

> This month, our From the Forum section is devoted to news of a new collaborative online project. Organised by forum regular eddieellis, the project team is aiming to recruit volunteer modellers and animators to create a *Robots*-style animated short. The work is unpaid and the project is being organised independently of *3D World*, but if it progresses well, you do stand a good chance of seeing your work in the magazine. More information, including scripts and concept artwork, can be seen in the new Community Project section of the forum.

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## SPECIAL THANKS THIS ISSUE

Crawfish pie, home-made Mai Tai

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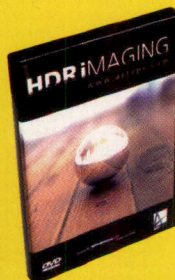
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# EXHIBITION

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## IMAGE OF THE MONTH

Congratulations this month to **Eugene Beskhodarny**, who wins a copy of the *Extreme Hires HDRI Library*, worth \$119. This prize is supplied by ART VPS, creators of the powerful PURE hardware 3D rendering cards.  
[www.artvps.com](http://www.artvps.com)





**DICK MA HING-SHUN** Chelonian  
*LightWave 3D, ZBrush, Photo-Point*

"I like to capture nature and wildlife by doing this kind of artwork. Apart from the background image, the objects in front of the tree trunk are real geometry. To create the tortoise, I used *LightWave 3D* to produce a simplified model, then took it into *ZBrush* to enrich its details by producing a displacement map. For rendering, I used the latest *FPrime* and *G2* plug-ins. The tortoise and the botanical elements also benefited from the subdivision surface scattering effect. Compositing was required due to the huge number of polygons, and a Z-depth image was also generated for faking DOF and contrast adjustment in postprocessing."

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**EUGENE BESKHODARNY** Tiny robot  
*Maya, Photoshop*

"I live in Saratov, Russia, and work as a freelance 3D modeller. I sometimes draw pictures, but only for my own pleasure. The image shown here, *Tiny robot*, was generated in *Maya 6.5* and composed in *Photoshop*. It was rendered using the standard *Maya* renderer. The model was initially produced for a 3D modelling competition, with the theme of 'Tenderness'. The idea for it just sprang straight into my mind."

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**ERIC TOBIASON** Gingerbread man  
*LightWave 3D 7.5, G2, Photoshop CS, Sinar CaptureShop*

"About five years ago, I started teaching myself *LightWave 3D*, and now I head the 3D department at a studio called Alter Image in Chicago. Although I was solely responsible for the 3D element in this image, the final image was a group project here at the studio. I used radiosity with image-based lighting, based on the background shot, as well as Worley Labs' *G2* to enhance the realism of the 3D."

[e] [etobiason@aichicago.com](mailto:etobiason@aichicago.com)



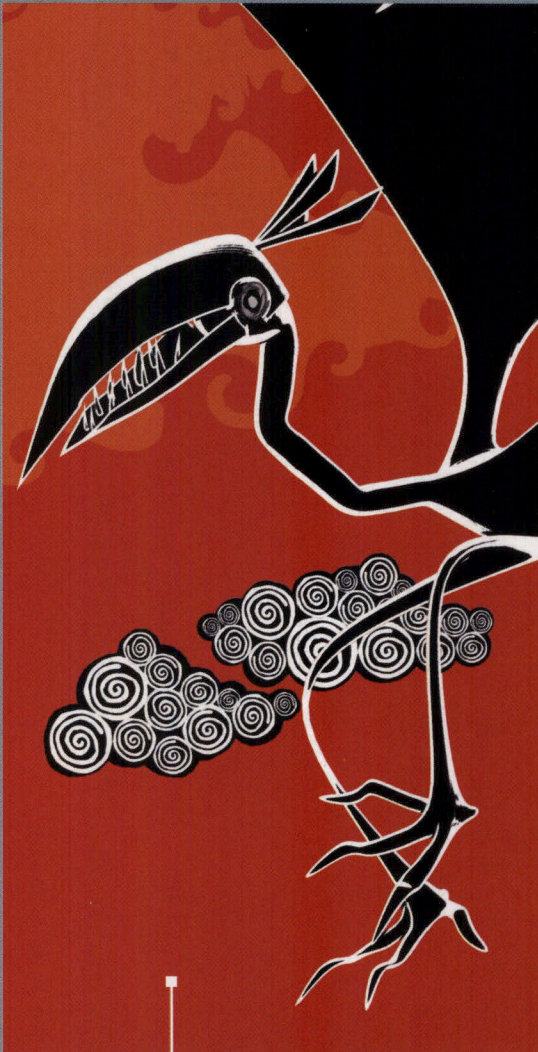


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EXHIBITION







**NATHAN POWELL** Various stills  
*3ds Max, Photoshop*

"I'm 22 and have just graduated with a degree in Illustration from the Arts Institute at Bournemouth. Throughout my degree, I've enjoyed using a synthesis of digital and traditional skills to create unique-looking animations. I've always had a love of computer graphics, and have gradually increased the 3D elements in my work. These images represent 3D characters I used in my latest animation, which were modelled in *3ds Max* and painted with an Ink and Paint material to help them mix seamlessly with all the hand-drawn elements. The animation is based on the Greek myth of Jason and the Argonauts. I'm hoping to improve my 3D character modelling and animation skills and pursue a career in animation or computer game development."

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 [w] [www.heynay.co.uk](http://www.heynay.co.uk)







# EXHIBITION

**IAIN BANKS** Mini  
*3ds Max, Photoshop*

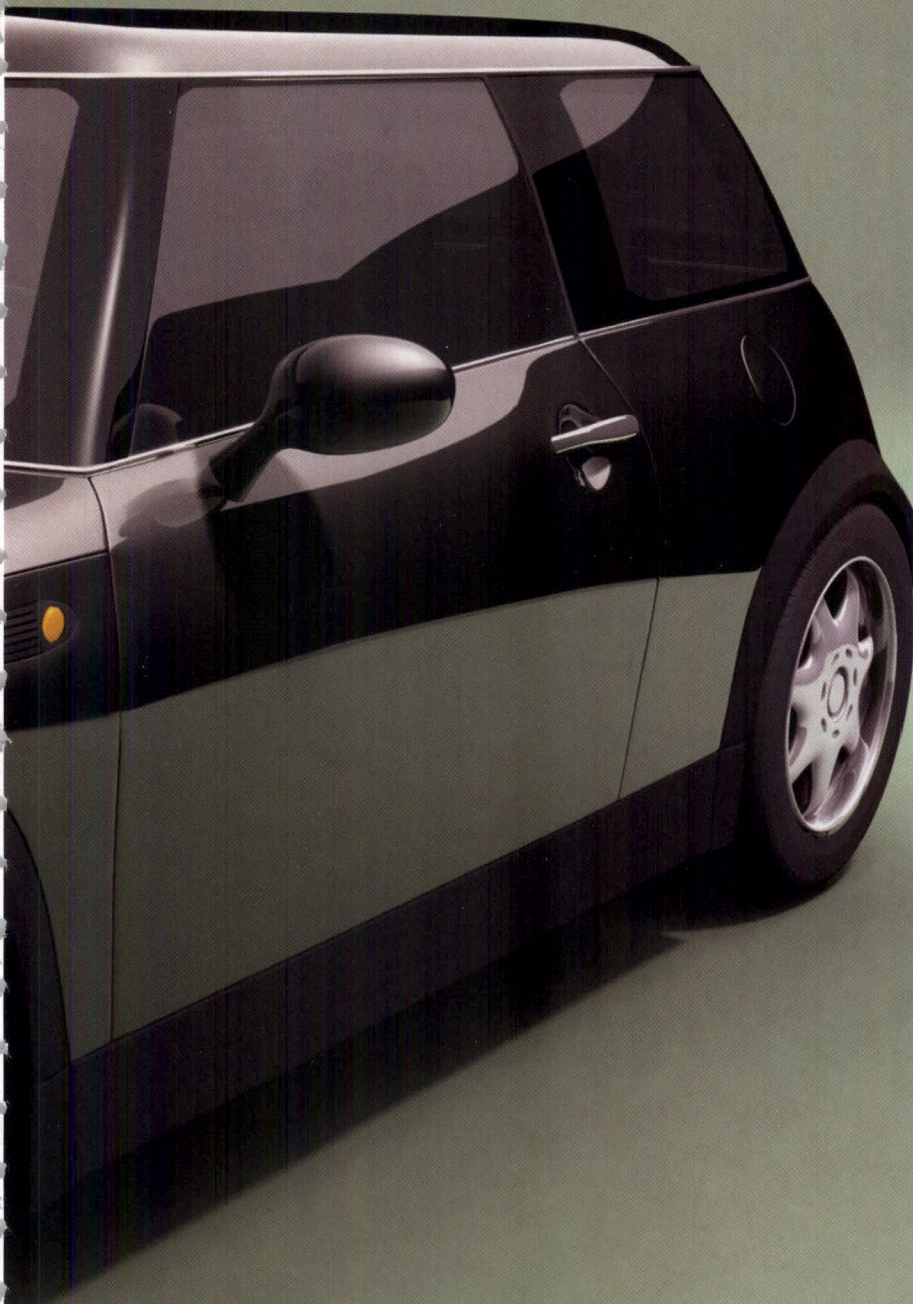
"I'm 21 years old and graduated this summer from the University of Teesside with a BA Honours degree in Computer Animation. The course taught me many valuable techniques, such as storyboarding, modelling and character animation. I really enjoy all aspects of animation and I'm regularly working on new projects in my spare time to build up my portfolio. The black Mini pictured here was modelled and rendered using *3ds Max 7* and edited in *Photoshop*. The lighting was done using global illumination, a spotlight and a white, self-illuminating plane for reflections. The car shader is a simple raytrace material with a falloff."

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[w] [www.ianbanks.com](http://www.ianbanks.com)



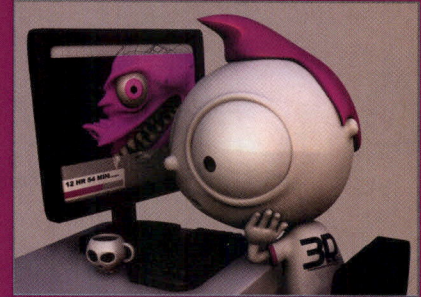
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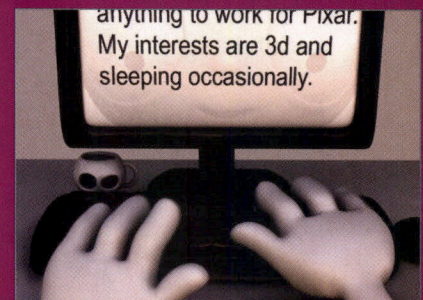


## GET YOUR WORK SEEN!

Want to get your image into a future issue of 3D World?  
Here's what you need to do...



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All images for the Exhibition section must be rendered out at least 2,000 pixels wide. Don't simply resize a smaller image in *Photoshop*. Save the finished render as a JPEG and make sure you show the full title of the image clearly.



- 02 TELL US MORE ABOUT IT**  
Supply a text (TXT) file explaining who you are, what you've done in the past, how the image was created, and what software you used. Include your full name, email address and URL. Don't write more than 200 words in total.



- 03 SEND IT IN...**  
If the attachments are less than 9MB, you can email images to us at [3dw.exhibition@futurenet.co.uk](mailto:3dw.exhibition@futurenet.co.uk). Larger files can be burned onto a CD and posted to us at: 3D World, Future Publishing, 30 Monmouth Street, Bath, UK



# PRE-VIZ

NEWS / OPINION / ANALYSIS

## Autodesk set to swallow Alias

**ANALYSIS** The news that Autodesk plans to buy Alias sent shockwaves through the 3D industry. We assess what prompted the move - and what impact it will have on the future of Maya and 3ds Max **BY MICHAEL BURNS**

**O**n 4 October, Autodesk announced its intention to acquire Alias for \$182million in cash. Barring anti-trust investigation, the acquisition is expected to be completed in four to six months and will see Autodesk gain control of all Alias' intellectual property and a product range that includes *Maya*, *MotionBuilder*, *StudioTools* and the cross-platform FBX data-exchange technology.

The buyout would bring two competing products within the 3D animation industry, *Maya* and *3ds Max*, under the control of the same parent company - a move that has prompted many *Maya* users to express concerns for the long-term survival of the application.

However, Autodesk and Alias are steadfast in their denial of any moves to kill off the software. "We're committed to both products, separately, for the long term," Alias CEO Doug Walker told us. "From a pure business point of view, it only makes sense. Both products are growing at 20-25 per cent today, so why would we eliminate one of them?"

We put a similar question to Autodesk Media & Entertainment's Head of Product Marketing, Maurice Patel. "Our plan is to continue both businesses as is, in the interim," he said. "They will continue to operate as separate entities. Long term, of course, we'll continue to develop the Alias product portfolio as our own. We don't plan to make any changes to the product line-up, or the pricing of those products."

After the news was announced, many users voiced fears that the acquisition would reduce competition within the 3D software industry, stifling technical innovation. Walker is dismissive of such claims. "There are lots of 3D vendors, with new entrants to the market

all the time," he said. "The bigger companies such as Microsoft and Adobe are also moving towards 3D very quickly, so I don't think there's going to be any lack of competition."

If anything, Walker claimed, the acquisition would foster technical development, rather than stifle it. "We'll innovate faster because we'll have access to Autodesk's \$300million R&D budget and we'll have access to more intellectual property," he commented.

Addressing concerns expressed on industry forums that Autodesk would not continue to support Alias' Mac users, Walker said that the companies were categorically committed to the Mac platform. "About 25 per cent of *Maya* sales are Mac today, so it's a significant part of our business. We understand that there is a tremendous amount of

dedication to the platform. We are committed to that marketplace, and we think we have the ability to grow our presence there over time."

More significantly, Maurice Patel also stated that Autodesk has no plans to drop support of the Mac OS. "I know most people associate Autodesk with Windows, but our

products are also on Linux and Macintosh, and we have no plans to change that. We'll continue to support the platforms, and support the products we deliver into the markets where they're used."

### FINANCIAL GAINS

The acquisition would form the second change of ownership for Alias in under two years. Previously under the aegis of SGI, the company was bought out for \$57.5million in June 2004 by private equity firm Accel-KKR and the Ontario Teachers' Pension Plan. Autodesk's cash would therefore provide these backers with a return of more than 200 per cent on their original investment.

### PLUGGED IN

#### ADOBE ADVANCES

Adobe and Macromedia have recently received clearance from the US Department of Justice for Adobe's proposed acquisition of Macromedia. Closure of the transaction remains subject to regulatory approval in several European jurisdictions, but both Adobe and Macromedia anticipate the all-stock transaction, valued at approximately \$3.4billion, to close successfully before the end of the year.

[www.adobe.com](http://www.adobe.com)

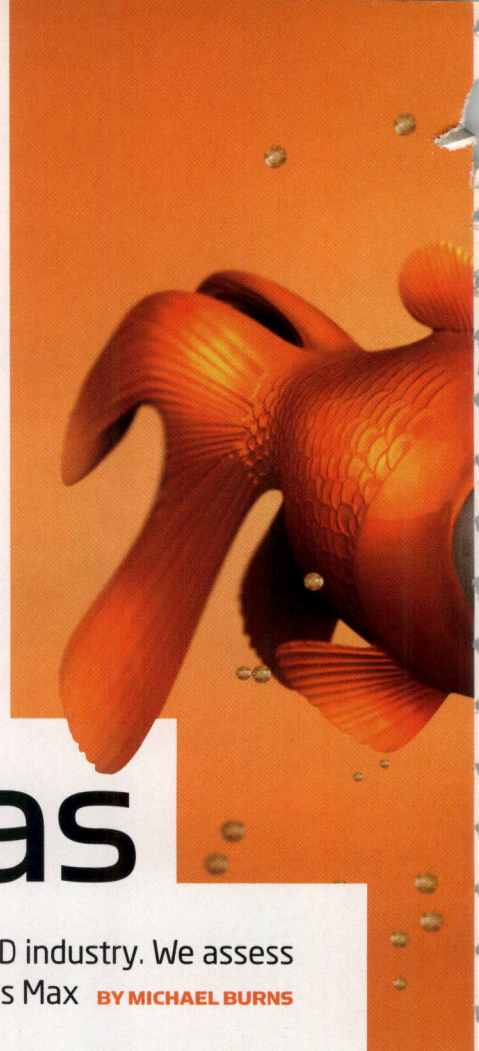






Illustration: John Shakespeare

● A big fish in a small pond?  
Autodesk's proposed buyout  
of Alias would leave it the main  
player in the 3D animation  
software industry, and poised  
to conquer other market sectors

## TALKING POINT | The Autodesk-Alias party line



"There's no real plan to merge *Maya* and *3ds Max*. Those kind of things rarely work out well. We already have a very diverse product portfolio in our effects business and we don't see any reason why we can't have one in our 3D business. We see FBX as a powerful component in facilitating 3D data exchange and in building very robust workflows between Alias products and our products. The way people use Alias and Autodesk products will change because they'll find it easier to move data between them. That's one area where we see a very significant short-term benefit to our customers."

**Maurice Patel, Head of Product Marketing,  
Autodesk Media & Entertainment**



"*Maya* will continue to be developed and marketed exactly as it is today. The focus will be on integrating it from a workflow perspective with all the 2D tools in Autodesk's Media and Entertainment division - *Fire*, *Flame*, *Flint*, *Inferno* and so on. We also now have the opportunity to introduce *StudioTools* to a lot more customers a lot faster. Autodesk has a very large base of *Inventor* customers and it's very exciting that we can get this technology out to many more users. The technology will continue to work in concert with all of the other CAD vendors. There's a real opportunity to get 1,200 distributors selling *StudioTools* in a very short period of time."

**Doug Walker, President & CEO, Alias**

However, Walker, who said he plans to leave the company about six months after the acquisition is due to be completed, told us that Alias was not in the process of looking to be acquired when Autodesk first approached it with an offer in May of this year.

"*Maya* was growing by 30 per cent, we were profitable, and our intent was, over the next three to five years, to IPO the business," he said. "That success didn't go unnoticed. But once we really took a look at [the proposal] and Autodesk shared some of its business goals with us, it seemed to be a way that could create much more value, much faster, for our customers."

One short-term benefit for these customers seems likely to be better interoperability between the two companies' software. "We'll integrate our technology more tightly with the other media and entertainment products from Autodesk," commented Walker. "There

will be a workflow that will be much more seamless for [studios] to use, should they so choose."

Maurice Patel was also keen to stress the synergy between the two product ranges, revealing that the primary motivation for the buyout was "the huge amount of intellectual property [that Alias possesses] in wide, broad areas that are very complementary to what Autodesk does as a business".

Patel further explained that Autodesk first identified the "very strong" automotive CAD and visualisation component to the Alias portfolio, in the shape of *StudioTools*, and secondly, saw its strength in the film pipeline, particularly with *Maya* and the FBX technology, now an industry standard for the exchange of animation data.

Continued overleaf ►

## FEED BACK

We want to hear from you on the issues affecting 3D artists, so from now on, once you've read our main news story on the facing page, why not visit our forum and post your reaction to it online?

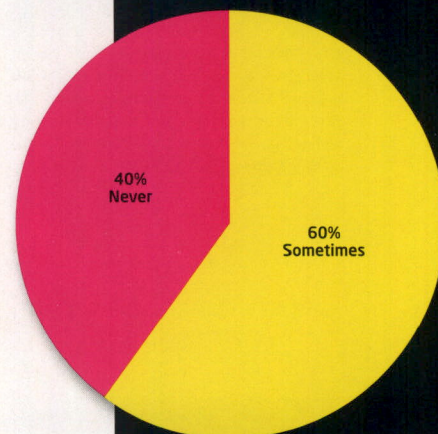
In this issue, we've discussed the intended acquisition of Alias by Autodesk and the way in which this could affect the CG industry. Turn the page to read feedback from animators and competing 3D software vendors.

This month, the question up for debate is: "If Autodesk succeeds in acquiring Alias, will the consolidation benefit the 3D animation industry?"

- Yes - the combined R&D resources and patent portfolio will lead to product innovation and integration
- Maybe - if Autodesk is smart and leverages Alias' R&D to connect the CAD pipeline to 3D software
- Unlikely - the fear factor will simply drive many *Maya* users to vendors of other established 3D software
- No - a lack of competition will lead to reduced innovation, a worrying monopoly and price concerns

## LAST ISSUE: THE VERDICT

"Do annual maintenance contracts offer 3D software users best value for money?" (Note: no votes were cast for 'Always')



Have your say | <http://forum.3dworldmag.com>



# Autodesk set to swallow Alias

- So how will this affect the marketing of the animation product lines? It's not hard to envision a future in which *Maya* could be focused solely on the visual effects market, while *3ds Max* could be retained as a one-box solution for other sectors, most notably games design.

## TALKING POINT | The industry responds

We asked leading 3D artists and software developers to supply their opinions on the proposed acquisition of Alias by Autodesk. Will it benefit the CG industry as a whole?



"When Alias and Wavefront merged in 1995, they maintained the existing 3D packages and released *Maya* three years later. I expect Autodesk to maintain *Maya* and *Max*, but eventually it too may release a 'next-generation' product. Whether or not this acquisition is good for the entertainment industry is a matter of perspective. For some customers, there are distinct benefits that a large supplier brings. However, many customers need to innovate more rapidly and in different directions to those Autodesk is likely to choose. This acquisition then opens up renewed opportunities for other software companies. Regardless of the direction Autodesk chooses, the next few years will be an exciting time of change for 3D animation."

**Kim Davidson, President & CEO, Side Effects Software**



"The good news is that I can't see either *3ds Max* or *Maya* being canned by Autodesk. Nor can I see them being amalgamated into one app, because they are completely different in the way that they work. But if the two products stay separate, I could see Autodesk looking to specialise them into their strongest fields - *Maya* into film and *Max* into games. Overall, I think end users will probably benefit from more resources from Autodesk. However, long-term, I could see users who choose each app for a use outside of its prime market wishing they'd learnt something else. A bigger fish in the industry benefiting from economies of scale could also cause some struggling 3D apps to fold. However, I can't see *Cinema 4D* being affected much because people buy our products for ease of use, and this buyout doesn't affect that."

**Perry Stacy, MD, Maxon Computer Ltd**



"The assimilation of Alias by Autodesk would bring little benefit to the 3D market. Customers are losing here - two nearly identical products from the same company is not a choice. And no one knows what this organisation will deliver, though a look at recent releases of *3ds Max* may hold a clue or two. NewTek is a customer-driven company, as three free releases this year indicates. We're aggressively developing our rendering technology - Autodesk hasn't done so for years. We adapt quickly to the market: *LightWave* was the first major 3D

**"IT BRINGS LITTLE BENEFIT: TWO NEARLY IDENTICAL PRODUCTS IS NOT A CHOICE"**  
JAY ROTH, NEWTEK

application to announce support for 64-bit, while *Maya* and *3ds Max* remained silent. Autodesk is a huge company that's slow to alter, offering homogenised products to the market. Does anyone think that will change?"

**Jay Roth, President, 3D Product Division, NewTek**



"This deal is not about *Max* or *Maya*. Autodesk has a lot more to gain by leveraging *StudioTools* into the CAD market than it does in the entertainment space. If Autodesk treats *Maya* as it has *Max*, this would be incredibly negative. In that case, the winners will be companies like Softimage and Luxology. However, if Autodesk plays this right and [successfully connects] the CAD pipeline to *Maya*, this convergence could be a huge win for the market in general. Marketing departments have long wondered why engineering cannot simply hand over a CAD file to be used for a print ad render, commercial animation or simply as a pre-viz tool for focus groups to evaluate design. If Autodesk can leverage the work Alias has done in this area and create demand among CAD users for entertainment-style 3D apps for marketing, this opens a very large door for all of us."

**Brad Peebler, President/Co-Founder, Luxology**



"I expect both *Max* and *Maya* to co-exist for some time to come, with slowly differentiating roles. I believe we'll also see a further boost for FBX as an industry standard. Ironically, the future lack of competition between *Max* and *Maya* may result in more innovation. The reason is that both parties can pool their R&D resources, and take their time to rethink workflows and develop new technologies. Acquisitions or mergers tend to be followed by further consolidation. It is unclear whether that's the case here, as none of the remaining companies can combine into entities that come close to Autodesk/Alias in market share. It therefore seems more likely that we'll see a healthy ecosystem of smaller, traditional 3D companies around Autodesk."

**Torsten Reil, CEO, NaturalMotion**



"The acquisition of Alias would consolidate one company's influence in a small industry. Autodesk has already stated publicly that it sees no reason for a rewrite of *3ds Max*. Development of both *Maya* and *3ds Max* will probably stagnate for the foreseeable future. I predict that proprietary in-house development will increase for medium-to-large studios. The lack of innovation from major vendors will inspire other parties to develop new products to meet the needs of users. I hope Autodesk's growing patent portfolio will not pose too great a danger to those opportunities."

**Stefan Didak, MD, Animagic and CTO, mantiCORE Labs**

*Softimage, SolidWorks and Mental Images declined to comment on the proposed acquisition of Alias by Autodesk*

However, Patel said that this will not happen. "There's really no plan to change the way we market and sell those products," he stated. "Yes, there is some overlap in the way they are sold today, but we have that already if you look at our effects products. It's just that one of the areas we were particularly lacking was the film pipeline. That doesn't mean, of course, that *Maya* is just going to be confined to that market. It's still going to be available to all the customers who use it and there are a large number of people who do so in many other scenarios."

Patel and Walker confirmed that until the acquisition has been approved by the regulatory bodies, the companies will be unable to make any concrete plans together or draw up a long-term strategy. "Obviously, new technologies, new products and new opportunities will emerge," said Patel, "but as regards the core products and their core business, it's going to be business as usual."

[www.autodesk.com](http://www.autodesk.com) [www.alias.com](http://www.alias.com)

## "IRONICALLY, THE LACK OF COMPETITION MAY RESULT IN MORE INNOVATION"

TORSTEN REIL, NATURALMOTION



"While *AutoCAD* has been the flagship of Autodesk's design products for many years, the development of new and exciting features has been slow. Meanwhile, *Inventor* has been battling *SolidWorks* for customer loyalty since its inception. This move would provide Autodesk with a deep and impressive well of stable features, file formats and, most importantly, design tools with a proven track record. Autodesk would then have the resources to fold the best features into its *Inventor*, *Architectural Desktop* and possibly even *AutoCAD* lines. Having a broad toe-hold in the industry gives Autodesk leverage over *SolidWorks* and its other competitors in acquiring new customers as well as development partners."

**Dave Tuck, Systems Engineering, Brandt & Hill**



"*Max* and *Maya* both have large, loyal user bases. Autodesk couldn't phase out or marginalise either program without losing customers, and it has the ability to help market both of them. *Maya* gives Autodesk new inroads into high-end film studios, and the company might grow its compositing market by integrating and bundling one of its compositing packages with it. Improved interoperability could expand the market for both programs as 'helper applications' at studios primarily using the other product. When it plans for next-generation development, Autodesk will have more code, developers and patents because of the merger."

**Jeremy Birn, author of Digital Lighting & Rendering**



"From both an economic and strategic standpoint, the biggest gain Autodesk would realise from this acquisition is *StudioTools*. It complements its current offerings in the market and opens the door for the company to offer a complete end-to-end solution for the design and manufacturing industry. There are also many other areas of overlap between the two companies that will benefit Autodesk, namely the ability to compete more aggressively in the gaming and entertainment markets. But at the end of the day, the building and design markets are so much bigger and more profitable that it's hard not to see the real motives for the proposed buyout."

**Jeff Mottile, President/CEO, CGArchitect.com**





# CINEMA 4D

## R9.5

**"More power, more speed, more grace." That was our goal. Here is the result.**

New light sources and settings (e.g. Ambient Occlusion and Area Lights) make even more realistic images possible – at speeds of up to four times faster than with CINEMA 4D R9.1. So that you can take full advantage of this new level in image quality, CINEMA 4D can now output images in glorious 32 bits per channel colour depth. And there's an additional multi-pass link to the high-end compositing tool Shake.

CINEMA 4D is now even easier to use and more efficient. The new full screen mode offers you more workspace, and the new Content Browser gives you a complete overview of all your 3D files.

A particular highlight of the Advanced Render module is SKY. With just a few clicks of the mouse, SKY lets you create and animate realistic high-end atmospheric environments, including customizable 3D clouds.

Visit us at [www.maxon.net](http://www.maxon.net) to download a demoversion or to discover more exciting details about CINEMA 4D.

# MAXON



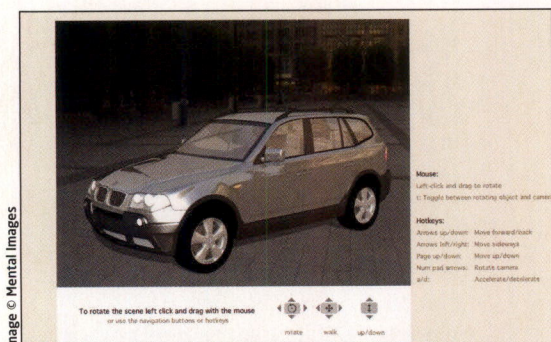
# Mental Images leads 3D online

**SOFTWARE** New RealityServer 2 technology provides real-time raytraced graphics via an ordinary web browser

**M**ental images is developing next-generation technology enabling users to take advantage of photorealistic 3D graphics in real time, in collaborative, server-based web applications.

An alpha version of the product, called *RealityServer 2*, was shown to a select audience at last month's Web 2.0 Conference in San Francisco, an event focused on future internet technologies.

Company president and CEO Rolf Herken presented a live demo of *RealityServer 2*, using a web browser to remotely navigate a BMW X3 (below) and a 3D simulation of a city, with full real-time raytracing.



● An alpha example of *RealityServer 2*. Users can manipulate 3D models as they are raytraced in real time, dynamically reflecting their surroundings

The virtual 3D environment can be shared among multiple users for collaborative design, review or multi-player games. As *RealityServer* is scalable, Mental Images claims 3D applications built on it could potentially support thousands or even millions of users.

The server approach also means there is no demand for end users to upgrade computers, buy high-end 3D software, use specific operating systems or download plug-ins. A web browser is sufficient to serve as the front-end interface and display.

*RealityServer* contains a variant of Mental Images' *Mental Ray* renderer and offers a number of photorealistic rendering options. It renders in real-time interactive mode provided the number of CPUs is commensurate with the complexity of the 3D content and the number of simultaneous users. Bandwidth restrictions, however, could affect interactivity on the client side.

Interoperability between Autodesk products and the *RealityServer* technology also looks assured after the recent renewal of the two companies' licensing and development agreement, which will see the further integration of *Mental Ray* into the growing array of Autodesk products. However, Herken declined to comment on whether *Mental Ray* could be in line to update *AutoCAD*'s aging Render command for the upcoming release of *AutoCAD 2007*.

*RealityServer 2* is scheduled for release in mid 2006, and is estimated to cost around \$2,500 per CPU.

[www.mentalimages.com](http://www.mentalimages.com)

## PLUGGED IN

### VES AWARDS

The fourth Annual Visual Effects Awards are open until 2 December for submissions from visual effects supervisors, artists and producers. Categories cover feature films, commercials, music videos, television, games and special venue films. Nominees will be announced in January and then a gala event and award presentation at the Hollywood Palladium in Los Angeles will follow on 15 February 2006. <http://vesawards.com>



## AARDMAN UNDER FIRE

**NEWS FLASH** Archived items lost forever in warehouse blaze

**WHILE WALLACE & GROMIT:** *The Curse of the Were-Rabbit* continues to cause a sensation at the box office, Aardman Animations was unfortunately dealt a blow last month when a fire devastated the company's storage facility in Bristol.

The warehouse was used to store precious items, including sets, storyboards, awards and props, together with film memorabilia from Aardman's 30-year history. Original sets from *Chicken Run*, *Creature Comforts* and the three *Wallace & Gromit* short films are understood to have gone up in smoke.

The fire broke out at the facility at around dawn on the Monday after *The Curse of the Were-Rabbit*'s

opening weekend in the US, where the film took an impressive \$16.1 million (£9.1 million) at the box office. The clay-animated film, which also includes CG scenes, is the duo's first big-screen outing after their handful of acclaimed shorts.

Sets and props are purpose-built for each production so there has been no impact on Aardman's forthcoming film or TV projects. No one was inside the building at the time of the blaze.

An investigation is underway to discover the cause of the fire.

[www.aardman.com](http://www.aardman.com)

● Original storyboards from *Morph*'s heyday may have been destroyed



## Houdini 8

**SOFTWARE** New dynamics and lighting in latest toolset

The latest release of *Houdini* incorporates a new dynamics architecture, light linking, Interactive Photorealistic Rendering (IPR) and character animation enhancements. The dynamics architecture in *Houdini 8* has been built from the ground up and allows Rigid Body, Cloth and Wire solvers to work together to create simulations. Studios are also able to integrate in-house solvers into the dynamics environment.

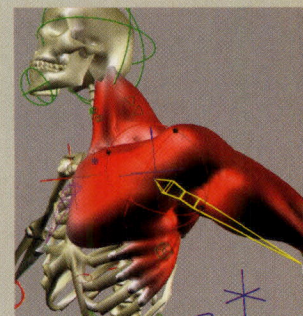
*Houdini*'s particle system has been tightly incorporated and information such as impact data can be used to create more complex effects such as crushing objects or staining surfaces. Also, the new Rigid Body solver includes 'glue' which makes it possible to hold together pieces of a pre-fractured object until it is acted upon by an outside force.

*Houdini 8* also includes tools such as the light linker and the parameter spreadsheet to improve workflow. Also, *Houdini*'s new IPR enables lighting artists to tweak a shot while Takes record and manage all the parameter changes.

Character animation workflow has been further refined while bones have been optimised for better interactive

feedback as animators pose and animate character rigs.

The new dynamics architecture is available in *Houdini Master* (\$17,000) while the character enhancements are offered in *Houdini Master* and *Houdini Escape* (from \$1,999). The lighting and interface enhancements are available in all *Houdini* products including *Houdini Select* (costing from \$1,299). [www.sidefx.com](http://www.sidefx.com)



● Bones have been optimised for better interactive feedback on the rig



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Whether it's 3dsMax™ using ATI FireGL™ Ashli's real time viewport effects or 3D video with Combustion's™ OpenGL, ATI FireGL™ and Autodesk Media and Entertainment™ provide the best tools to get the job done.

To quote 3D World October 2005: "... 256MB ATI V7100 graphics card, and whether you judge its DirectX or OpenGL performance, it comes out as a clear group winner ...". So how much is it for all this power? ATI FireGL cards start at £149 to the award-winning top of the range FireGL V7100 at £599.

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# Carrara 5 revealed

**SOFTWARE** Eovia's software gets an extreme makeover for its latest version

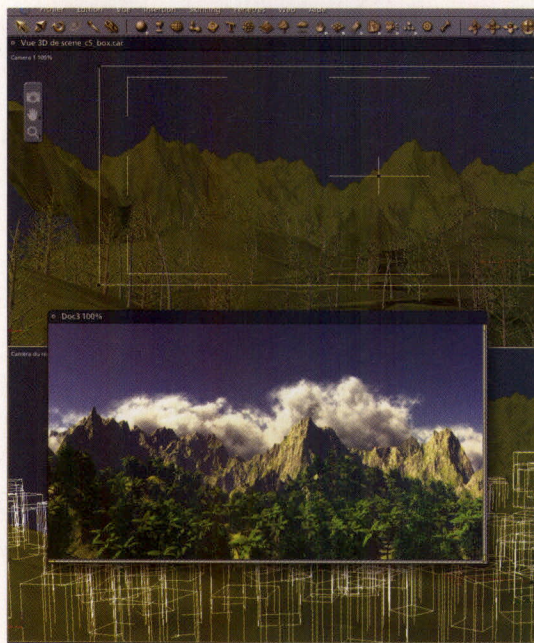
**E**ovia has promised users a full range of "significant enhancements" in the latest instalment of its modelling, animation and rendering toolset, *Carrara 5*.

New features in *Carrara 5* and *Carrara 5 Pro* include an overhauled and updated interface; a new graph editor that provides direct access to the motion curves of objects, as well as parameters of animations; and enhancements to the vertex modeller, based on Eovia's *Hexagon* software. There are also improvements to the rendering component, including subsurface scattering, displacement mapping and ambient occlusion. Volumetric clouds that realistically scatter the light of the atmosphere have been added, while significant updates have been made to the particle engine, too. Import and export format support has been expanded to include *After Effects* and RPF export, as well as matchmoving support for *SynthEyes* and *MatchMover*.

Eovia CEO Philippe Richard said: "*Carrara 5* will stimulate professional users toward greater creativity and help them to stay competitive, while those who are just beginning to venture into 3D will realise incredible ease of use and unbelievable results."

*Carrara 5* is scheduled to ship in December and costs £169, while the more advanced *Carrara 5 Pro* is available for £379. Further information about upgrades and beta software is on the website.

[www.eovia.com](http://www.eovia.com)



● The new Replicator tool distributes objects on a surface and, for example, enables you to create forests of trees on a terrain in seconds

## PLUGGED IN

### ARCHITECT TEST

Submissions are open for the CGArchitect.com Industry Scholarship. The winner is chosen based on their demonstration of outstanding graphics and visualisation skills, originality of presentation and the use of new and original CG graphics techniques. To qualify, students have to be enrolled on a full-time architecture, design or arts course at a post-secondary institution.

This year's sponsors include Iridas, Absolute Textures, e frontier, Hyperfocal Design, Marlin Studios, Softimage and VisMasters, though more companies are anticipated to join and create a cash prize fund that will be in excess of \$2,000. The deadline for submissions is 1 June 2006.

[www.cgarchitect.com](http://www.cgarchitect.com)



## PIONEER PROTOTYPE

**HARDWARE** New technology enables users to draw in mid-air

**PIONEER HAS DEVELOPED A** new 3D 'Floating Interface' that enables users to draw text and pictures and also manipulate 3D graphics in mid-air. The prototype, manufactured in conjunction with the Shimane Institute for Industrial Technology, was unveiled by Pioneer at CEATEC Japan 2005 in October.

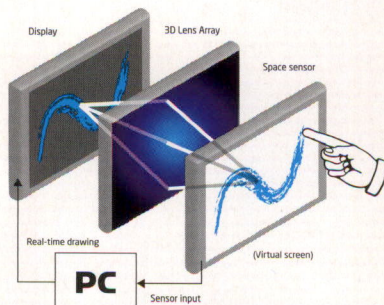
A combination of spatial sensors, a 3D lens array and 3D image processing technology detects the position of the user's moving finger in mid-air, renders the images in real-time and projects the results onto a 15in screen.

A virtual PC window can also be 'dragged'

onto the virtual screen and, if 'pressed', a depression is formed in that part of the window.

No special goggles are required to view the 3D images, and the simple hardware configuration means the technology could be easily mass produced.

[www.pioneer-eur.com](http://www.pioneer-eur.com)



● You could soon be creating art in the air using only your finger, thanks to this new technology

## boujou bullet 2

**SOFTWARE** bullet 2 borrows from 2d3's high-end tracker

2d3 has released *boujou bullet 2*, which the company says is "a substantially re-engineered update" of its automatic tracking and matchmoving system, and which features much of the third-generation tracking technology available in 2d3's high-end product, *boujou three*.

*bullet 2* offers rapid automated tracking, with step-by-step scene diagnostics and user guidance so that matchmoving becomes a straightforward process for any 3D or visualisation artist.

A new feature-tracking engine (borrowed from *boujou three*) is said to deliver a tenfold performance increase, and tracks features with greater accuracy in adverse conditions. 2d3 claims the tracker can automatically identify hundreds of features in each frame of a shot, and can handle temporary occlusions, extreme lighting and radical camera moves.

Almost every type of material can be tracked efficiently by *bullet 2*,

whether it's smooth, low-detail textures, such as sand, snow and sky; highly repetitive structures and patterns; or detailed but unstructured surfaces, such as fur and hair.

*bullet 2* is fully compatible with *boujou three* and most 3D and compositing packages. Available for Windows, Mac and Linux, *boujou bullet 2* costs from \$2,500, with upgrades priced from \$999.

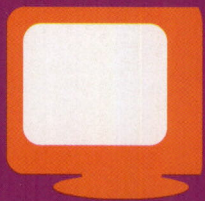
[www.2d3.com](http://www.2d3.com)



● 2d3 robs from the rich toolset of *boujou three* in order to provide a host of cool features to *bullet 2*



# changing the face of 3D



## WEBSITE OF THE MONTH

[www.supershorts.org.uk](http://www.supershorts.org.uk)

Over 70 2D and 3D animated films should be available to view at Talent Circle's Super Shorts Film Festival 2005 website, together with 300 short films that screened at the five-day festival in Soho in September.

The UK independent short film festival showcases emerging and established British filmmakers and screens films of no more than five minutes in length. Festival director Andrew Hai says his aim is to make short films more accessible to the general public. The festival offers free entry to every screening and industry event. It uses public venues such as coffee bars, and generously provides unlimited amounts of complimentary beer, popcorn and refreshments.

Talent Circle has now begun a tour of the UK with a selection of all the festival films. For more details, and to view the films online, take a look at the festival website above. ●



## Further sites...

[www.debevec.org](http://www.debevec.org)

Paul Debevec's website looks at relighting techniques whereby an actor's live-action performance can be captured in such a way that the lighting and reflectance of the actor can be designed and modified in postproduction. He also presents a technique for capturing time-varying volumetric data of participating media. Basically, some high-tech smoke recreation technology.

[www.trapcode-people.net](http://www.trapcode-people.net)

Trapcode is launching a new online meeting place and forum, called Trapcode People, for VFX and motion graphics artists. The website promotes sharing and downloading Adobe After Effects files, Shake scripts and movie files. Users have the opportunity to discuss techniques with other artists and participate in various projects, plug-in development and beta testing.

## AI.implant engine

**SOFTWARE** Midway first to standardise on AI.implant

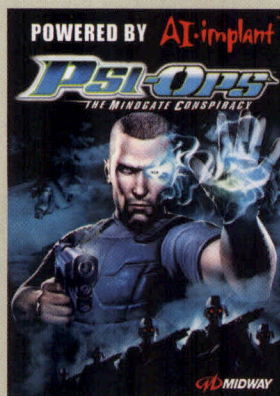
Midway Games has signed an agreement with BioGraphic Technologies (BGT) to use AI.implant as its standard and preferred AI engine across its studios in Chicago, Seattle and Austin in the US.

Paul LeFevre, Chief Technical Officer at Midway Games, said: "We have been working with BGT since 2002 and have seen a tremendous evolution in the AI.implant engine. Great AI is becoming one of the key differentiators in our next-gen titles, and we felt that the strengths of BGT and AI.implant make it a great platform to standardise on."

BGT President and Founder Dr. Paul Kruszewski added: "Midway was our first games customer, and so it's only fitting that they are the first company to standardise on us."

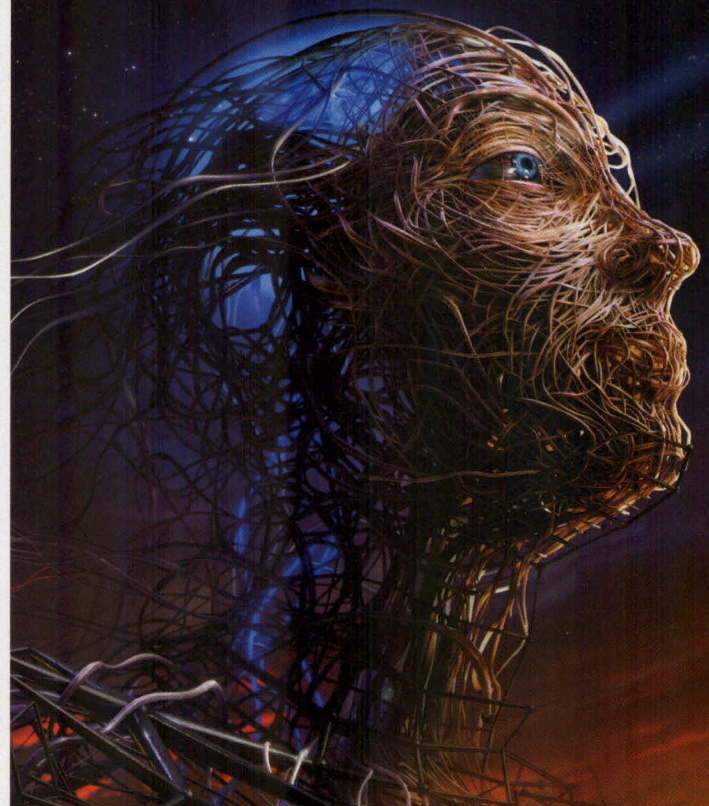
As well as games developers, the software has applications for visual effects, animation studios and military simulation. AI.implant costs from \$10,000.

[www.biographictech.com](http://www.biographictech.com)



● PS2 and Xbox games can progress to the next level with advanced AI

**NEWSFLASH** Midway has acquired UK games developer The Pitbull Syndicate. The Newcastle-based developer of Midway's arcade-style racing thriller, *LA Rush*, will be renamed Midway Studios - Newcastle. [www.midwaygames.com](http://www.midwaygames.com)



Maya® 7, the latest release of the award-winning 3D software, is packed with innovative new features allowing you to realise your creative vision faster and more easily than ever before.

Capitalising on Alias MotionBuilder® technology, Maya 7 makes character animation easier and more accurate. Other improvements such as advanced render layering and new modelling, texturing and effects tools help you achieve more with Maya.

To find out how the new and innovative features of Maya are changing the face of 3D, visit [www.alias.com/maya7](http://www.alias.com/maya7).

# Maya™ 7

Alias | [www.alias.com](http://www.alias.com)

Image created by Meats Meier ([www.3dartspace.com](http://www.3dartspace.com))

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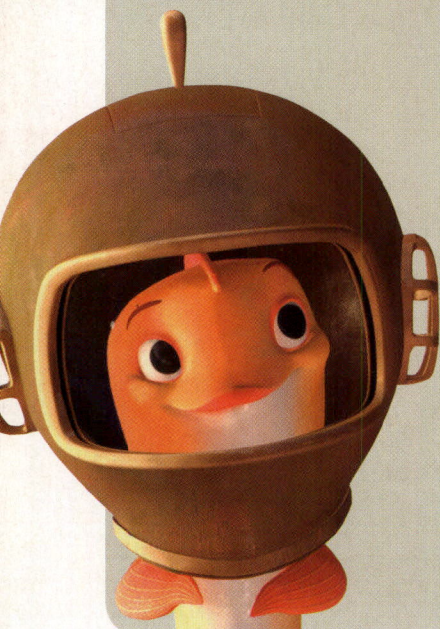
● Disney created feathers for Chicken Little and the other characters using its custom X-gen program, which was updated from the *Dinosaur* version to accommodate subdivision surfaces

# Disney's 3D debut

**FILM FOCUS** Disney has made the crossover from traditional 2D animation and hopes to take on the goliaths of CG with *Chicken Little*, its first wholly 3D animated movie

BY BARBARA ROBERTSON

● An office water cooler helped with the creation of *Fish Out Of Water's* voice. Water simulation software and hand-drawn shapes control the water in his car



**B**uena Vista Pictures has just begun the international rollout of Disney Feature Animation's first entirely 3D animated film. Five years in the making, *Chicken Little* represents a turning point for the Mouse House, which supported traditional 2D animation well into the 21st century.

However, 2D animation nearly brought down the house. Disney's 2D features *Atlantis* (2001) and *Treasure Planet* (2002) tanked at the box office, with US revenues of \$84million and \$38million respectively. And, even though the 2Dtoon *Lilo & Stitch* (2001) did well, its \$145million was coconuts compared to *Shrek's* \$268million and *Monsters Inc's* \$256million that same year.

*Chicken Little* Producer

Randy Fullmer and Director Mark Dindal had put their eggs into the 3D basket several months before *Shrek* was released, and long before Disney closed its last 2D studio in 2004. In 2000, Fullmer and Dindal were finishing Disney's *The Emperor's New Groove*, a critically acclaimed wacky 2D film that opened towards the end of the year. Back in the spring of that year, at about the time Disney released *Dinosaur*, its live-action film with 3D characters, Fullmer and Dindal had begun knocking around ideas for *Chicken Little*.

"There was a lot of CG talent from *Dinosaur* looking around, starting to wonder whether Disney was going to commit to CG

or leave that to Pixar," said Fullmer. "The public had a big appetite for CG, but there was a big debate here about our 2D heritage. We thought it was time to kick ourselves in the butt, wake up and figure out what we could do with these fantastic tools."

## 3D TRANSFER

Disney's use of 3D in feature films goes back to *The Great Mouse Detective* (1986). "We had lots of parts of the pipeline in place

[before *Chicken Little*]," said Steve Goldberg, VFX Supervisor on *Chicken Little*. "The character work with *Aladdin* and each show [Disney worked on] picked up more." Also, Goldberg explained, Disney's The Secret Lab (formerly DreamQuest Images) had developed 3D

software tools in order to create the kangaroo in *Kangaroo Jack* and the dragon in the movie *Reign of Fire*.

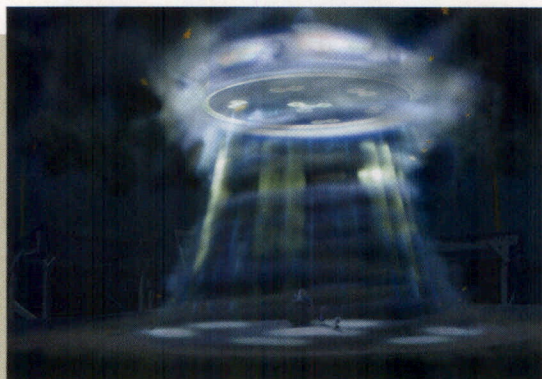
"The software in place didn't scale to an entire movie," Goldberg revealed. "We had to bolster the infrastructure and create more intuitive animation tools, and everything in between."

Of the 36 animators on *Chicken Little*, 18 had never used 3D tools. "We selected animators with aptitude, who wanted to learn 3D," Fullmer said. "There was a lot of grumbling at first, but I asked them at the six-month point if they would go back to pencil, and not a single animator wanted to do that."

**"WE THOUGHT IT WAS TIME TO KICK OURSELVES IN THE BUTT, WAKE UP AND FIGURE OUT WHAT WE COULD DO"**

RANDY FULLMER, PRODUCER, CHICKEN LITTLE





● Disney artists used a combination of *Houdini*, *Maya* and *Maya Paint Effects* to create a number of alien ships, cornfields and so on, along with a host of zany effects



● The characters in the foreground, Goosey Loosey and Foxy Loxy, are two of nine main characters, all of which were animated using Disney's custom *Chicken Wire* and *Chicken Cluster* tools

Disney helped ease the transition with plug-ins for *Maya* and proprietary software, and the retraining proved successful.

"The crossover is 2D friendly," said Dick Zondag, Supervising Animator on *Chicken Little*. Zondag's first digital animation was as a Supervising Animator on *Dinosaur*, but before that he had been a traditional animator since 1982. "Almost everything we do here is drawn first," he explained. "[The system] is geared towards a 2D animator, right down to the X-sheet."

For example, before modellers began sculpting Mayor Turkey Lurkey and the aliens, the *Chicken Little* characters Zondag supervised, he drew every facial shape from the front, three-quarters and profile. "I had stacks and stacks of drawings," he revealed. "That way they're not generic humanistic shapes – they're more stylised."

This was no doubt especially important for *Chicken Little*, which animators created in a zany 2D style with squash and stretch, smear frames and stretch frames. "Like Bugs Bunny," Zondag said.

So could *Chicken Little* become Disney's *Toy Story* or *Shrek*? The early buzz surrounding the movie is cautiously optimistic, but can a 2D cartoon in 3D clothes be novel enough for today's audiences? Possibly. *Time* magazine called it a winner, "with storytelling sense and graphic precision worthy of the old animation masters."

"At the end of the day, a movie is only as good as the story, no matter how many fancy little things are in there," Zondag said.

*Chicken Little* opened in the US on 4 November and is scheduled for release in the UK on 10 February 2006  
<http://disney.go.com/disneypictures/chickennlittle>



● Runt of the Litter, Abby Mallard (aka Ugly Duckling) and Chicken Little were animated using many of the same controls, even though their shapes are different, as this made it easy for the animators to move from one character to another

## TALKING POINT | 3D tools for 2D animators

Disney Feature Animation created a pipeline full of tools and used some familiar software to help ease their more traditional animators over into the world of 3D

Disney based its feature animation pipeline on *Maya*, but with a few additional twists, squashes, stretches and clever interface designs.

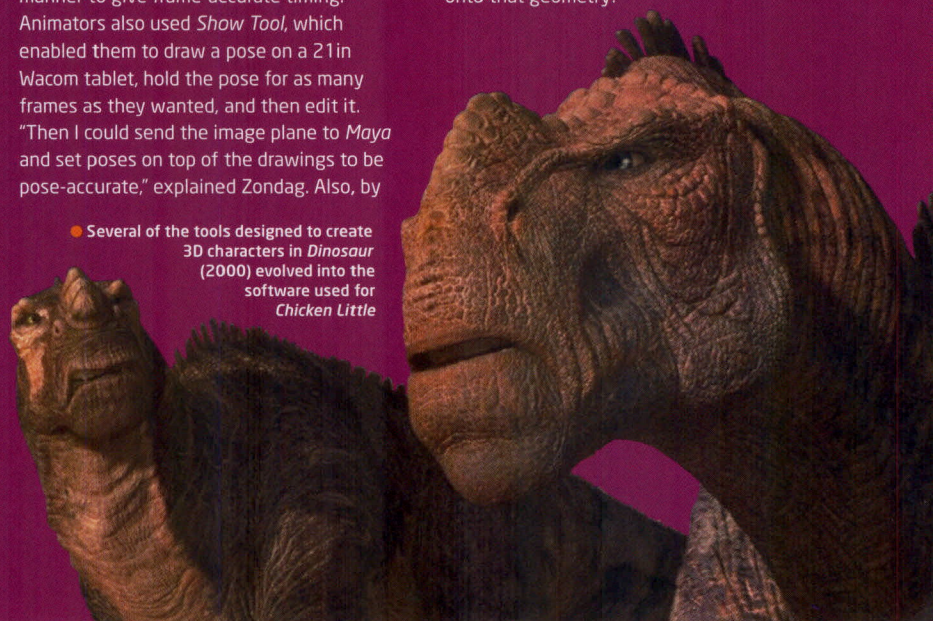
The effects crew used Side Effects' *Houdini* *Particles*, *Maya Paint Effects*, Next Limit's *RealFlow* and *X-gen*, a proprietary fur and feather program, in addition to *Maya*. Apple's *Shake*, Disney's proprietary *Lumiere* and Pixar's *RenderMan* were also used, alongside several tools Disney especially created for the film.

These include *Chip*, which plays sound files and breaks down dialogue in an X-sheet manner to give frame-accurate timing. Animators also used *Show Tool*, which enabled them to draw a pose on a 21in Wacom tablet, hold the pose for as many frames as they wanted, and then edit it. "Then I could send the image plane to *Maya* and set poses on top of the drawings to be pose-accurate," explained Zondag. Also, by

using a program called *Sketch Pose*, which was developed by Glen Keane for upcoming animation *Rapunzel Unbraided*, animators could have the rig snap to a drawing. "It came in handy for controlling the rigs for the five spidery legs on the scary aliens," said Zondag.

Disney farmed out one part of the pipeline, though: the conversion of the film into stereo 3D. Industrial Light & Magic handled that, using a clever method the facility had devised to add a right-eye image. This was created by duplicating Disney's geometry from a right-eye view and then projecting Disney's image onto that geometry.

● Several of the tools designed to create 3D characters in *Dinosaur* (2000) evolved into the software used for *Chicken Little*





# Projects round-up

This month's new projects range from the sinister to the sweet

## 01 PONTIAC COMMERCIALS

The Mill's Pontiac adverts are a lighting extravaganza, with neon trails, shattering glass and showers of light. "Every shot had 3D special effects," says Lead *Flame* Artist Yourick van Impe. "[Programmer] James Studdart wrote two plug-ins for *Shake* to create the motion blur for the light trails. I worked on *Shake* and *Flame* and used the soundtrack to graphically synchronise the light sequence, 3D-projected the light sequence onto the buildings and did a final comp in *Flame*. We used 20 different Sparks, and used morphing techniques to make the transitions from car to car."

[www.the-mill.com](http://www.the-mill.com)

## 02 OXY SPOTS

The Occidental Petroleum Corporation commissioned Brickyard VFX to create two spots that ask what life would be like without petroleum-based products. In one, the body of a Corvette flies off its frame: "We shot a hero plate of the car as a model reference, then shot one plate of the frame with tires, and one without," says VFX Supervisor Patrick Poulatian. "The tireless frame was propped on a hydraulic rig that dropped the frame. We created a Corvette in *3ds Max* and animated pieces flying off. Once stripped, the empty frame dropped to the ground."

[www.brickyardvfx.com](http://www.brickyardvfx.com)

## 03 MAYNARD'S WINE GUM AD

If you bump into an evil troll who blocks your path, just fob him off with some Wine Gums. It works. Jim Radford, Creative Head of 3D, Commercials and TV at The Moving Picture Company, used *Maya* to model and texture the troll in this scenario: "The troll had to be engaging but not threatening, and a lot of effort was spent on his face, both in the level of detail and subtlety of expressions. Once primary animation was approved, we added jiggle and bounce to bring him to life, then composited in *Inferno* and *Combustion*."

[www.moving-picture.com](http://www.moving-picture.com)

## 04 TER PROMO

Smith & Foulkes and Nexus Productions have promoted the French national rail organisation's TER service with an animation inspired by the African savannah and a Bavarian fairytale. Darren Price, Head of 3D, explains: "We needed the CG people to be as full of character as the cheetahs in the ad, which were easier to stylise. Modelling them with Art Deco sculptural features, and using the *Brazil* renderer's subsurface scattering, they're not too realistic or cartoony. The cloth on the capes and the princess' cloak used *3ds Max*'s new cloth simulator."

[www.nexusproductions.com](http://www.nexusproductions.com)

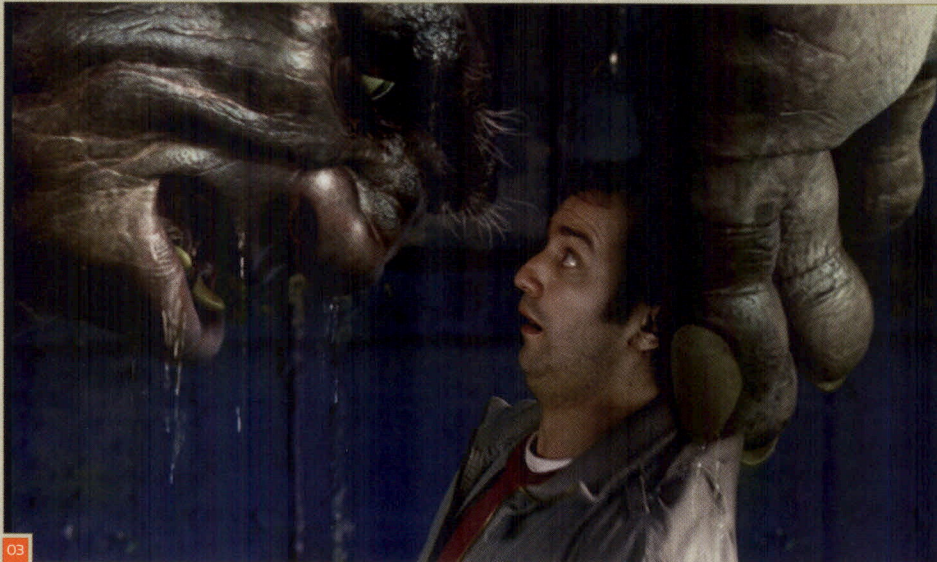
## 05 CHILDREN 1ST CAMPAIGN

Children 1st, previously the Royal Scottish Society for the Prevention of Cruelty to Children, turned to Studio AKA for its latest campaign, as director Marc Craste explains: "The idea was to create a nightmarish internal world. We built huge trees growing out of a brick floor, which gave it a dark, *Alice In Wonderland* feel. The girl was designed in the Edward Gorey/Tim Burton mould: skinny, pale, big eyes with lots of mascara. The ad was done in *Softimage XSI* and composited in *After Effects*, with flicker and film grain added."

[www.studioaka.co.uk](http://www.studioaka.co.uk)



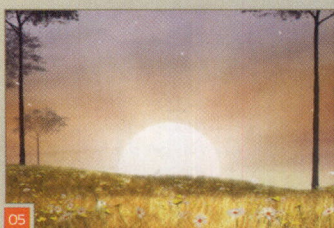
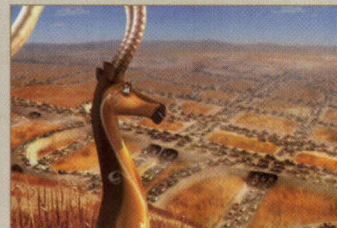




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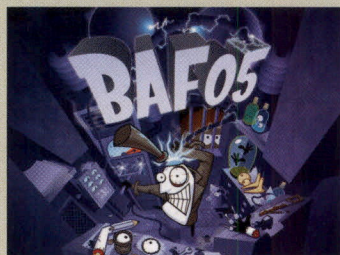


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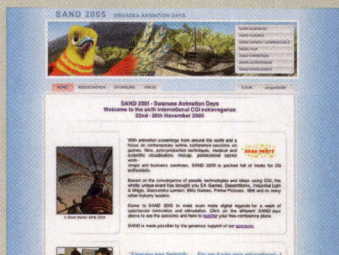


# EVENT HORIZON



## BAF 2005 16-19 NOV, BRADFORD, UK

BAF's annual eclectic mix of masterclasses, workshops, screenings and awards, with top names in the animation industry. If you can't get to Bradford, view this year's selected web animations online and vote for your favourite. [www.baf.org.uk](http://www.baf.org.uk)



## SAND 2005 21-26 NOV, SWANSEA, UK

Swansea Animation Days is a CGI-fest packed with screenings and special sessions covering anime, games, films, postproduction, medical and scientific visualisation, motion capture and more. Plus, the legendary SAND party! [www.sand.org.uk](http://www.sand.org.uk)



## ANIMADRID 25 NOV-2 DEC, MADRID, SPAIN

The International Festival of Animation in Pozuelo de Alarcón, Madrid, includes animated feature films, shorts, TV series and student works. The top prize of €12,000 is awarded to the best full-length feature film. [www.animadrid.com](http://www.animadrid.com)



## ALIAS 3DECEMBER 3 DEC, LONDON, UK

Last year, 5,000 3D artists gathered in 25 cities around the world to celebrate 3December. This year, the community meets again to showcase work and polish *Maya*, *MotionBuilder* and *StudioTools* techniques. [www.alias.com/events](http://www.alias.com/events)

# eDIT 2005

**SHOW REPORT** Almost 3,000 people flocked to this year's eDIT Filmmaker's Festival in Frankfurt

Organised in conjunction with the Visual Effects Society (VES), eDIT achieved record attendance at this year's event.

The festival team amassed a top line-up of speakers for presentations, panels and special events that covered production and postproduction in feature films, TV, commercials, short films and games development.

In a packed auditorium, Industrial Light & Magic CG Supervisor Hilmar Koch presented an in-depth talk on *Star Wars: Episode III - Revenge of the Sith*, with insights such as Anakin Skywalker's descent to the dark side requiring over six million rendering hours.

Meanwhile, Electronic Arts' Studio Art Director Henry LaBounta concentrated on the latest advancements in next-gen games that feature real-time animation, interactivity and heightened realism. He showcased EA's *Need for Speed: Most Wanted*, *FIFA 06* and *NBA Live 06* and emphasised

how characters could be brought to life by using mocap techniques as well as realistic skin shading and sweat simulation. Visual effects crews from leading facilities also revealed effects secrets on the making of *Batman Begins*, *The Brothers Grimm*, *Charlie and the Chocolate Factory*, *Kingdom of Heaven*, *Sin City* and *War of the Worlds*.

The highlight of eDIT, however, was when animation pioneer Phil Tippet, the award-winning visual effects supervisor, director and founder of Tippet Studio, was awarded eDIT's Festival Honours.

During the tribute, Tippet and the audience were treated to a surprise video clip from Ray Harryhausen congratulating Tippet on receiving the award. In an unforgettable moment, one of the stop-motion skeletons from Harryhausen's work on *Jason and the Argonauts* appeared in the clip and also congratulated Tippet.

Visibly moved to receive the personal message from his mentor, as he picked up his award Tippet commented: "It was Ray whose *Seventh Voyage of Sinbad* sent me on this life in cinema nearly 50 years ago, on the way to receiving this great honour." A special eDIT session followed featuring Tippet in conversation with fellow Academy Award winner Chris Landreth, creator of the animated short *Ryan*.

Artificial Humans was the theme for this year's eDward. *Domestic Droids* by Horst Da Luz was awarded the top prize. The jury said the half-minute piece "combined original humour, intelligence, irony and good technical craft." Second and third prizes were awarded to *Life inc.*, created by Michele Busiello and *The Perfect Weapon* by Jean-Claude Rozec.

The festival concluded with a special preview of *Wallace & Gromit: The Curse of the Were-Rabbit*.

[www.edit-frankfurt.de](http://www.edit-frankfurt.de)



● Awarded Festival Honours at eDIT, Phil Tippet said his career was inspired by Ray Harryhausen's *The Seventh Voyage of Sinbad*

## Production line

The month's other releases in brief



### LIGHTWAVE 3D 8.5

*LightWave 3D 8.5* includes hardware support of OpenGL 2, a new Multishift tool with editable history, *Photoshop*-style texture blending modes and improved dynamics. The 64-bit port is also now available. *LightWave 8.5* is free to *LW8* owners or costs from \$795.

[www.newtek.com](http://www.newtek.com)



### TRUESPACE 7

An overhauled *trueSpace 7* enables real-time design, modelling and animation to be performed within a virtual 3D shared space by remote participants over a broadband connection. Useful for training, simulations and project coordination in games production. *trueSpace 7* costs \$595.

[www.caligari.com](http://www.caligari.com)



### ALIAS LEARNING

Personal Learning Editions of *Maya 7* and *MotionBuilder 7* are now available for free download. Alias says both PLEs offer almost every feature found in the respective commercial versions. Also, for the first time, PLE users can import/export files between the two PLEs.

[www.alias.com](http://www.alias.com)



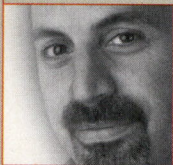
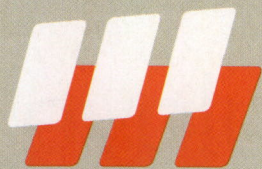
### VIRTOOLS DEV 3.5

*Virtools* (owned by Dassault Systèmes) is now shipping *Virtools Dev 3.5*. Features include a new video engine, ready-to-use shaders library,

improved OpenGL performance, point cloud integration, support for 3D textures, and a new VR-specific SDK. It costs about €8,000.

[www.virtools.com](http://www.virtools.com)





In an ordinary world, the *RenderMan* business would be a splendid one to be in. Pixar's rendering package is an industry standard, it doesn't require advertising, and it's used by practically every major CG company on the planet. Said companies routinely expand their renderfarms, resigning themselves to sending very large cheques to Pixar as a result. And since people can never have enough rendering capacity, the cash just keeps rolling in.

Yet, unfortunately, Pixar isn't in the business of making a few million dollars. Pixar is in the business of making billions of dollars. This company is a factory for producing intergalactic megahits, and now that it's about to go solo, it's looking for a distribution deal that will, one assumes, be more lucrative than the one it had with Disney. It's a safe bet that this new arrangement will provide a much fatter percentage of the box office, ownership of sequel and other rights, and possibly the right to swim in the studio executives' pool.

So it also seems reasonable to presume that the problems of handling smaller customers, and having to provide support, bug fixes, documentation and new software (backward-compatible new software, no less) feel like a distraction right now. They're a set of technical and administrative headaches that the company would probably rather not have.

Letter from Hollywood

## RenderMan alive

With a solo movie career beckoning, Pixar's mind must be on higher things than software support, points out **Craig Zerouni**. So where does that leave RenderMan users?

Meanwhile, on the other side of the equation are the customers. Even five years ago, there wasn't much competition to Pixar's feature film business, and what there was (Blue Sky, PDI) was built around proprietary rendering technology. Now there are more companies creating and distributing all-CG films, and most of them rely exclusively on *RenderMan* to complete their work.

It must focus these studios' minds to know that they're totally dependent on a competitor for essential capabilities. It may be the done thing in Japan to have competitors rely on each other for core technology, but our Western style of winner-takes-all capitalism really frowns on that sort of thing.

Of course, effects facilities (as opposed to CG feature animation companies) also use *RenderMan*, and they have no particular problem with Pixar being in the movie business. Some may even appreciate it, since it gives their software developer some insight into the problems of its customers. And this alone may be enough to sustain *RenderMan* for some time to come.

But if I had to guess, I'd say that this set of conflicts of interest is unlikely to last. This is especially true with rendering software being a growth area, since increasing renderfarm sizes always mean more licences of the packages that run on them. And there are now several rendering alternatives, including a couple of *RenderMan* clones. Many of these products are very good, and it's not as if *RenderMan* can't be improved.

It seems likely that, as this business evolves, one side or the other is going to start pulling back from this arrangement. It may be that Pixar takes *RenderMan* off the market, or it may be that larger CG studios start to walk away from using it. But something probably has to give.

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3DWorld Magazine #66

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John Manning, CEO  
Blue Planet Studio, Inc



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# Guinness 'Noitulove'

Framestore CFC's Head of 3D, Andy Boyd, reveals how the studio stepped back in time to create the latest epic ad for the legendary Irish stout

BY MARK RAMSHAW

## DETAILS

### TITLE

Guinness *Noitulove*

### CLIENT

Guinness / AMV BBDO

### DIRECTOR

Daniel Kleinman

### POSTPRODUCTION

Framestore CFC

### RUNNING TIME

50 seconds

### FIRST BROADCAST

October 2005

### URL

[www.framestore-cfc.com](http://www.framestore-cfc.com)

### TEAM SIZE ON PROJECT

Up to 14

### TIME TAKEN

14 weeks

### SOFTWARE USED

*Maya, Houdini, Mental Ray, RenderMan, Inferno, Shake*

The decision to return to a more epic style of advertising for the Guinness brand is clearly a good move. While the ads of old were brooding and occasionally whimsical, the latest is dazzling, yet 'knockabout'. And where tick followed tock in the revered *Surfer*, time does a complete U-turn in *Noitulove*, tracking the evolution of man back to his humble beginnings, courtesy of an ever-changing world crafted by Framestore CFC.

"The ad was funny at the animatic stage, so we knew all we would have to do was make the images look beautiful and we'd have a winner," said Andy Boyd, Head of 3D for the facility's commercials department.

With little more than greenscreen footage of the three actors and a brief shoot in Iceland providing the only live elements, the Framestore CFC team set about tackling the challenge of filling out the rest of the devolving world using a variety of solutions. "It wasn't about trying to be clever, merely using what helped get good results," said Boyd. "We rendered most of the animals and fur in *Maya*, then used *Mental Ray* for the *T. rex* and the fluid effects that produce the meteor fireball. Some of the background was rendered with *Houdini Vmantra*, with trees and foliage done with *RenderMan*. And Visual Effects Supervisor William Bartlett even took time-lapse photographs of baking experiments in his kitchen to create a morphing background landscape."

Although technologically straightforward for a studio such as Framestore CFC, the task of creating so many different creatures was always going to be a labour-intensive task. Impressively, creature creator James Healy managed to rig 10 in the same number of weeks. It helped that the studio was given the freedom to choose its own creature types for the various mammal, bird, aquatic and amphibious stages. "It would have been quite difficult for every animal to be approved, as each one is in a constant state of flux," said Boyd. "They're always morphing, so it was more about getting approval on a transition. And because we had to create so many creatures in such a short space of time, it made it very difficult to be too critical of any one creature anyway."

The fact that each creature is glimpsed briefly also made optimisations possible. A *T. rex* was only required to turn its head and roar, for example. Said Boyd: "Normally, we would spend a long time getting the weighting and muscle systems right for our creatures. Here, most animals are only seen taking one or two steps. It was more about communicating the right feel for each creature. We just rigged and textured depending on how they were going to be shown, though the morphing needed to be carefully planned and built in at rig level."

## PLANT LIFE

Most daunting was the effects work required for the plant life and geology. The key to producing so much 3D so quickly was a system to procedurally create variants of each element. "Once the life cycle of an oak tree had been created in *Houdini*, the same set-up was used to create different versions of any given tree: maple, oak, fern and so on," said Boyd. "The same principle was applied to bushes, grass, rocks and water, with an initial build for each that could be easily transformed."

With so many environments, evolving elements and creatures to consider, Boyd said it was crucial to avoid getting too caught up in a shot. Regular work-in-progress viewings in *Inferno* helped in this respect. "The trick is to watch the whole thing through, find those shots that really jump out at you, and then focus on those," he said.

Boyd claimed it also helped that director Daniel Kleinman proved so effective at conveying his vision. "Some directors aren't familiar with the CG process, but it was more like he was the wise one helping us than the other way around. Everything he comes up with translates directly into a good-looking image."

As a result the team was free to focus its energies on shot creation. "This certainly wasn't a project where we could just do one piece of R&D and then apply it to the whole thing. But that's precisely what makes watching the finished ad so interesting."

***Noitulove* is showing on TV and in cinemas across the UK. It can also be viewed at [www.framestore-cfc.com/commercials/guinness\\_noitulove/index.html](http://www.framestore-cfc.com/commercials/guinness_noitulove/index.html)**

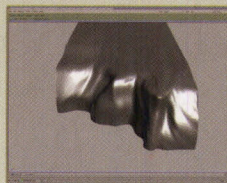
## FREEZE FRAME

Three men stand in a pub, each sipping Guinness. As they put the drinks down on the bar, they begin walking in reverse, back out of the pub and through a London street, new buildings and tower blocks visibly deconstructing all around. We see the trio walk backwards across the land, oak trees sprouting up around them, then evergreens shrinking down into the ground as they retreat into a wall of ice. By now, the three have become cavemen, and as the landscape continues to shift, they take on various evolutionary forms. As the soundtrack comes to a climax, one of them visibly burps. Cut to a shot of three pints of Guinness and 'good things come to those who wait'.





**IN FOCUS** | Every shot of 'Noitulove' required its own environment, plantlife and creature

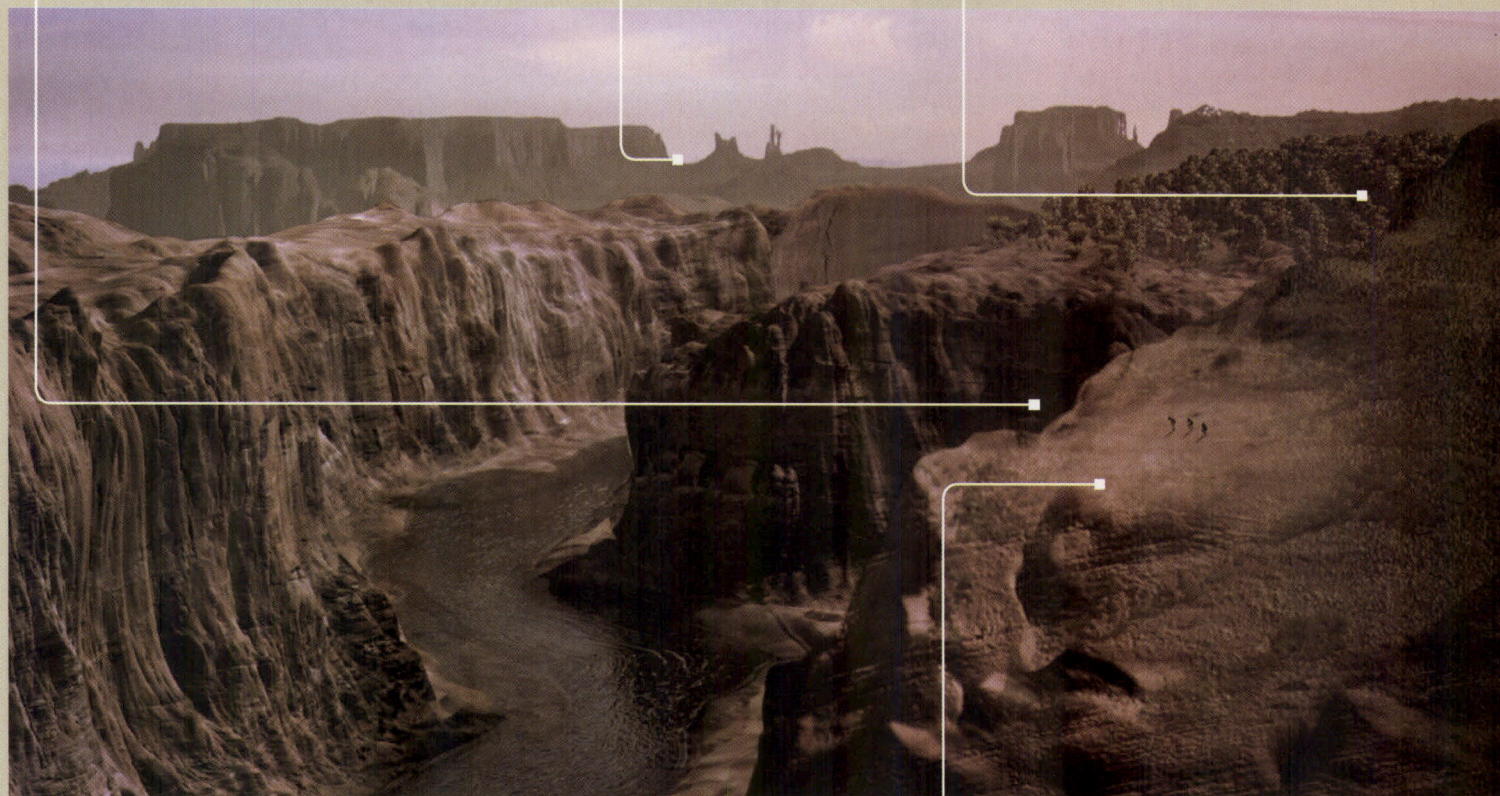


**01** Rather than run a fluid simulation, the waterfall was created in *Houdini* using particles with motion blur applied. Other water elements used displacement shaders and refraction, and dynamics to simulate surface properties.

**02** "If you play the ad backwards, it works really well," said Boyd. "It's harder to get the brain to accept things when shown in reverse. I tried to convince the agency to occasionally show it the 'right' way as part of the ad campaign."



**03** Countless curves had to be created to represent grass growing and dying continuously. 'Ribbox' archives, which are only read at render time, were generated. They were referenced like instances making for an efficient render scene.



**04** One of 10 creature rigs created for the ad by James Healy. "At first, we did hack around to try to find other existing creature models, but most suitable ones were so old that they would have needed remodelling anyway," says Andy Boyd.

**05** With just three weeks to go, Andy Boyd took on the waterfall sequence. "It was difficult to know where to start, yet when I examined time-lapse images of waterfalls, I could see room for artistic interpretation."



**06** "For rock erosion, the geometry was stored in an image that represented the 3D position of its surface. Erosion was simulated on these images, and the image was used to displace the geometry like a normal displacement map."







## MeNTaL RoY

Following an incident with a dropped dongle, **Mental Roy** managed to smash his head quite badly on the corner of a desk this month. Ever the trouper, he sent in the following thoughts from his hospital bed on Autodesk's plans to engulf Alias



**HEY BABY, WANNA MERGE?** No, not you, bearded man, the lady behind you wearing the '3D artists do it very, very slowly' T-shirt. Oh, she's gone. Funny that. Nevertheless, I would like to announce that I am formally open to takeover offers, though preferably not the hostile kind. If Autodesk would like to buy me, for example, I'm available for the very reasonable sum of £182, which I think you'll agree is an absolute bargain.

Naturally, I understand that spare cash may be a little scarce at the moment, what with having signed on the dotted line for Alias and all. Well done all round, I say. I do find it so confusing having all these different manufacturers publishing different packages for different platforms.

After all, when I want to buy an operating system for my computer, I'm not instantly confronted with a myriad of bewildering options, one of which does this better and one of which does that, meaning I might have to spend valuable time working it all out. No, I buy Windows for the PC or OS X for the Mac, safe in the knowledge that both are sophisticated, flawless pieces of software produced by companies that *really care* about their customers. Linux doesn't count. It's free, and that means there's obviously something wrong with it.

So what I'd really like is, for instance, a merged version of *3ds Max* and *Maya* that only works on the PC (because no one in 3D really uses Macs. I mean c'mon, not *really*), with a nice hefty maintenance contract on top for my own peace of mind, naturally. I don't mind if you bump up the price a smidgeon, either. Hell, charge what you like. With more of that pesky competition out of the way, I can feel secure buying and using software all

produced by the same company, which will leverage my workflow and integrate my pipelines.

In fact, I can't see the point of having more than one 3D software developer at all, so I'd like to put forward my own humble plan. Once this whole Alias/Autodesk thing is done and dusted, let's get NewTek and Maxon involved. A bit of friendly buyout-ing should make things even clearer for the beleaguered 3D artist who's confused by all this choice. Then maybe Softimage can buy the newly-christened MaxTek (NewOn? Perhaps not) and chuck out development on all those incredibly costly, non-interoperable packages that no one really likes. That no-one really important likes, anyway.

It's only a short hop from there to the much more preferable Autolmage, your one-stop-shop for everything 3D. That's fine as far as it goes, but what about image editing? *Photoshop*. Hmm. Adobe likes to buy the odd little company now and then, so surely it would make sense for it to join in, too. The shareholders are happy, the stock market is happy, the board directors are happily counting money. Everyone wins. (There's a nagging feeling that I've left someone out of this list, but not to worry.)

Sadly, though, it looks as if my grand plan won't see the light of day any time soon. The people at Autodesk have been saying they'll keep *Max* and *Maya* separate for the foreseeable future, thus stalling the whole process before it even starts. Frankly, it's this sort of shortsightedness that keeps the 3D industry from enjoying the glory of, say, Hollywood studios, or the aforementioned Apple and Microsoft.

Anyway, my head still hurts and people keep looking at me in a funny way. I think I might just have a little sleep.

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### PLUGGED IN

#### ERRATUM

In our group test in issue 69, we stated that our RM Xeon Workstation did not feature a FireWire port as standard, limiting its interoperability with video-capture solutions. RM has been in touch to tell us the dual 3.6GHz machine in question does in fact come with FireWire as standard. You can find more details about the workstation, and other RM products, on the website below.

[www.rmt.co.uk](http://www.rmt.co.uk)



## GLOBAL ILLUMINATION #08

Key stats and trends from the 3D industry in specific countries. This issue: **Italy**

**T**he Italian animation industry has witnessed steady growth over the past few years, and this continues today, thanks to the support of the government through state broadcaster RAI. This support includes flexible funding initiatives and a solid infrastructure, as well as help with distribution.

Italian animation studios have played a part in the development of many national and international animated series, such as *Lupo Alberto*, *Corto Maltese*, *Cocco Bill* and *Stefi*; and animated feature films such as *La Gabbianella e il Gatto* and *Johan Padan*. Many of these are created in collaboration with other continental European studios.

The leading animation studios in Italy include Mondo TV, The Animation Band, Burning Brain, Cartoonia,

Cineteam Srl, Colourland Srl, Crayons Srl, De Mas & Partners, FarmToons Production, MOTUS Srl, Muspryz Snc, Neo Network and StraneMani.

• The Italian animation industry is growing at an annual rate of 10-12%

These statistics were provided by Digital Vector, a research and consultancy firm providing reports on aspects of the global animation industry. For more information, visit the Digital Vector website: [www.digital-vector.com](http://www.digital-vector.com)

• The animation industry in Italy has the capacity to produce about three animated films per year

• There are about 90 animation studios in Italy, the majority of which are located in cities such as Rome (indicated) and Milan

• Italy imports a number of animated films from various countries, including the US and Japan





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● Framestore CFC's Lead TD, Martin Macrae, created the fearsome Pinky demon creature shown here as reference art based on a hi-res image from ID Software. Macrae had to adapt the image as ID's original game geometry wasn't suitable for animation, and then had to fuse a wheelchair to the body

## FACTFILE

### PROJECT

*Doom*

### RUNNING TIME

1 hour 40 minutes

### LEAD STUDIOS

Double Negative,  
Framestore CFC

### WEBSITES

[www.dneg.com](http://www.dneg.com)  
[www.framestore-cfc.com](http://www.framestore-cfc.com)

### ESTIMATED BUDGET

\$70million

### PROJECT DURATION

One year

### TEAM SIZE

Up to 50 at Double  
Negative, up to 20 at  
Framestore CFC

### SOFTWARE USED

Maya, RenderMan,  
Houdini, Shake, Inferno

*"Although ID Software was involved in the filmmaking process, we didn't come under any pressure to copy directly from the game"*

MARK NELMES, VFX SUPERVISOR, FRAMESTORE CFC





# IMPENDING DOOM

Can ID Software's legendary shoot-'em-up franchise succeed where so many others have failed? We talk to Double Negative and Framestore CFC about the challenges involved in re-imagining the videogame series for the big screen

BY MARK RAMSHAW

**A**s anybody unlucky enough to have watched *Mortal Kombat*, *Resident Evil*, *Alone In The Dark*, or countless others will no doubt attest, videogames do not make the best source material for movies. If *Tomb Raider* succeeded, it's undoubtedly because the original game borrowed so liberally from the *Indiana Jones* films in the first place. Little wonder, then, that there was scepticism from mainstream pundits about ID Software's plans to create a film version of *Doom*.

But let's not forget which target audience the *Doom* movie is aimed at. It's unlikely that director Andrzej Bartkowiak or stars Karl Urban and The Rock signed on in the hope of bagging Oscars. As Jesper Kjolstrup, VFX Supervisor at Double Negative says: "*Doom* is obviously not going to be to everyone's taste. But then I think videogame movies are made primarily for fans."

Not such an outlandish notion, particularly with a game often proclaimed the most influential and most popular of all time, and with combined sales since its debut over a decade ago of several hundred million dollars.

Perhaps the movie actually points the way forward for game spin-offs. Rather than watering down the concept for the mainstream, *Doom* is unapologetically hardcore. ID Software has taken an active role in the film's development, ensuring much of the concept work for the creatures, weapons and environments

stay remarkably loyal to the vision of the games. And like *Tomb Raider*, those games are heavily influenced by classic movies (such as *Alien*), so it's not such a leap to bring things full circle.

It can't hurt that the studios working on the effects - Framestore CFC, Double Negative and Stan Winston Studio - are all highly experienced in this sci-fi horror field, either...

## FICTIONAL TECHNOLOGIES

All the facilities were brought onboard well before principal photography began. Double Negative's work involved effects for sequences that augment the *Doom* mythos rather than replicate game elements: "Because of the nature of the shots we took on,



● Double Negative created banks of 3D eyes and animated 3D veins using procedural shaders then added 2D elements on top for a 3D eye transformation. It eventually matched a lens worn by The Rock on set



## UAC Research Facility Olduvai, Mars

● As well as using vast amounts of NASA data to create detailed views of Mars, Double Negative also generated the 3D establishing shots of the Martian base. "Getting the colouring for Mars without creating something too monochromatic was quite tricky," says VFX Producer Steve Garrad. "Global illumination really helped with the these shots"

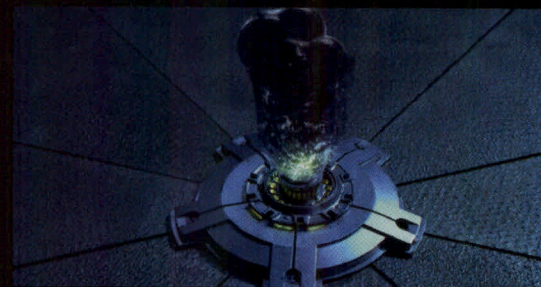
**"The blast from the famous BFG weapon is much more violent in the movie. Here it's capable of taking out an entire room"**

JESPER KJOLSRUD, VFX SUPERVISOR, DOUBLE NEGATIVE

explains Kjolsrud. Double Negative eventually created a wall system composed of numerous individual cells, each of which moves in and out of alignment, with an overall fluid-like motion created using the facility's own custom *Ocean* software.

For the wormhole droplet, the studio needed to create another fluid-like effect, this time for a matter transporter that literally sucks in marines at one location and spits them out on a completely different planet. "The process with the wormhole droplet was similar to the nanowalls in that we had to spend time on 'look development' before they actually shot anything," says Double Negative VFX Producer, Steve Garrad. At first, a bubbling effect was created using a MetaMorph in *RenderMan*,

● Action from the 'first-person shooter' sequence: "We decided to use CG for the weapon and hands rather than rely on greenscreen," says Ben White at Framestore CFC. "Real footage would have very difficult to light, whereas here we could work with an environment map generated from the background"



● "The wormhole surface forms slowly, gloopily bubbling, then violently sucks the person in," says Double Negative's Jesper Kjolsrud. "We took reflections from plates shot on set and hand animated the surface drops"

but this brought up refraction issues, so a polygon surface solution was chosen instead, with volume work then carried out for the droplet interior. "When it came to the shoot, the actors playing the marines were hanging on wires. We'd place our generic double on top, and replicate the movements of each actor getting dropped through the wormhole. We didn't render the double; instead, [it] provided the surface we could wrap the bubble over."

Double Negative also got the chance to model Mars itself, with Polish director Bartkowiak eschewing miniature work. "Going with a CG version of the base gave more control than the footage of a real model could," notes Garrad. "Similarly, for views out of the windows, we used full 3D rather than relying on matte paintings."

Other establishing shots provide a wider view of the crater housing the Martian base, and a quick zoom that shows the entire planetary surface. "For the crater, we used a volcano in Hawaii as reference. That was modelled, procedurally textured and painted, and then placed into data for the whole planet, created using ultra-high resolution maps we got from NASA."

About 200 shots were completed by Double Negative for *Doom*. Sadly, one shot that the studio worked on from the beginning of the project right until the very end was cut.

"We'd been developing our volume renderer, *DNB*, for the big finale explosion, complete with huge mushroom cloud," says Garrad. "It's a shame [it was cut], but we're already using the technology on our next production."

### FIRST PERSON SHOOTER

Over at Framestore CFC, VFX Supervisor Mark Nelmes and his team worked on a series of 130 shots, most of which were more directly linked to the original *Doom* video games than those handled at Double Negative. These included shots on the iconic Imp, Baron and Pinky demon creatures.



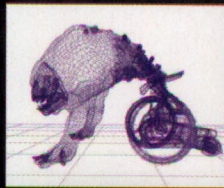
● A procedural system creates an offset lighting pattern on the gun by using the maps from around five frames prior. For weapon flashes and whenever the camera goes around a corner, the gun had to be lit by hand



## IN FOCUS | Framestore CFC CG Supervisor Laurent Hugueniot on the Pinkyemon's big-screen debut

01

Although ID Software supplied a million-plus polygon version of the Pinkyemon model, the Framestore CFC team needed to create a fresh model for the film. "ID's geometry wasn't suitable for animation," explains Hugueniot.



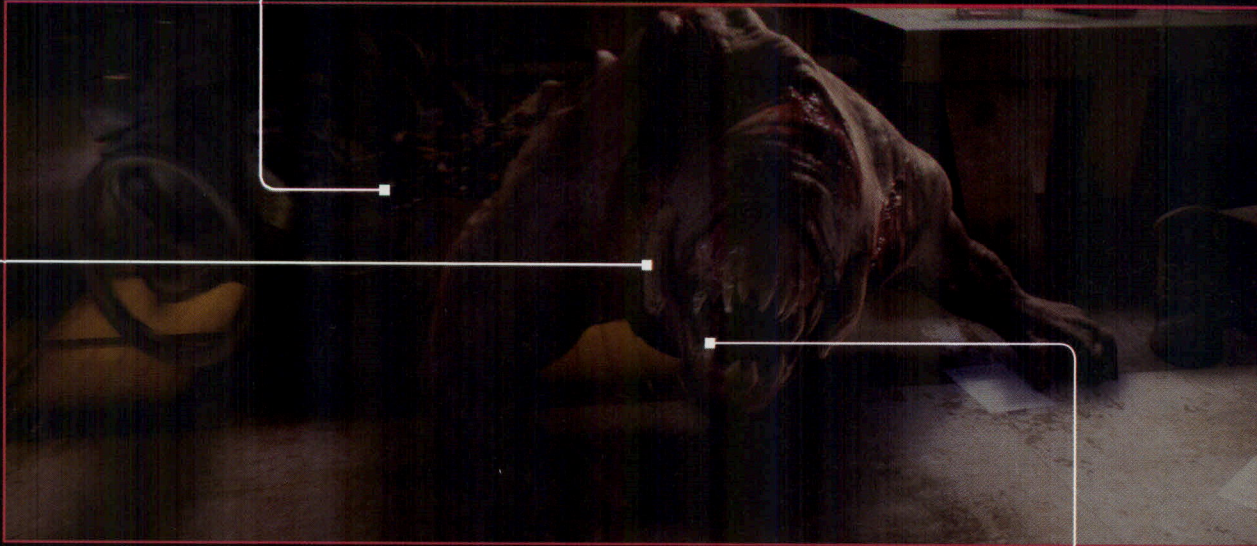
02

The *Maya* model of Framestore CFC's version of the Pinkyemon. "We worked to keep the model as light as possible," says Hugueniot. "A lot was put into the section at the back where the flesh fuses with the metal part of the skeleton."



03

"The Pinkyemon is quite chunky, with big shoulders and arms, which makes it quite a difficult creature to animate properly," says Hugueniot. "A muscle rig was created to drive the movement and deform the skin realistically."



04

With just a few controls to manipulate the mouth and no details such as forehead creases or ears, facial animation on the Pinkyemon proved simple. However, the mechanical back-end elements couldn't be animated as easily.



05

The solid, untextured Pinkyemon model in the CG environment. "We added specular, bump and displacement maps to provide extra detail, and also created a subsurface scattering shader," says Hugueniot.

06

The final rendered scene. One custom tool accurately models Pinky's drool, while further solutions add the required gore. "When Pinky starts getting cut up by the chainsaw, we use fluid simulation to spread blood across his skin."

"The more humanoid monsters were created as physical suits by Stan Winston Studio, while the Pinkyemon exists only as a CG character," explains Nelmes. "Stan Winston Studio supplied us with a Baron head, plus head and hands for the Imp. For the Pinkyemon, ID Software provided high-resolution files of their model. But while *Doom 3* provided a base for the film's production design, the creature in the movie isn't quite the same, so we really only used them as a starting point."

For several minutes, the movie mimics the 'first-person shooter' viewpoint traditionally presented to gamers. "We combined all the footage, retimed it and added in CG elements," explains Nelmes. "Sometimes, stitching was a matter of putting greenscreen behind a doorway; at other times, it involved blending sets and textures together as the camera whip-pans."

Using the camera as the character's eyes also presented challenges. "We couldn't just copy the approach taken by the game," says Nelmes. "The aspect ratio is different, and the view needs to remain clear for the most part. And the gun itself has to behave as the lead actor, in a way – conveying energy in action sequences, heightening tension, anticipating corners, and so on."

While more than 5,000 frames of the first-person shooter sequence rely on steadycam footage, around 2,000 frames of it and the ensuing Pinkyemon battle sequence are purely digital.

"We spent a lot of time detailing the [battle] room and setting up the lighting," says Sequence Supervisor Ben White. "It needed to be sympathetic to the *Doom* aesthetic, but to heighten terror we also needed to create pools of light and darkness. With the creature animation driving the camera, it created a real crossover between the lighting and animation work." The CG environment required a dedicated custom pipeline and optimisation for massive amounts of motion blur in order to render efficiently.

The Pinkyemon may be the hero creature of the movie, but White believes the CG surroundings are ultimately just as important a visual effect. "Because of his nature, people are bound to realise that the creature is CG, but I hope they never even consider that the surrounding room isn't actually real." ●

***Doom* opened in the US at the end of October and is scheduled for release in the UK on 2 December. Visit [www.doommovie.com](http://www.doommovie.com) for further details**



● The Imps were realised using prosthetics from Stan Winston Studio but CG was used for head replacements, and for their writhing tongues. "The tongues can split off and attack independently," says Framestore CFC's Laurent Hugueniot. "What really makes them so gross is the organic, slimy texture detail. It's very much like the underside of a real tongue"





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# TUTORIALS

TECHNIQUES / TIPS / TRICKS / SECRETS

## ZBrush Sculpture

In the first of two tutorials exploring the power of the organic sculpting software on the CD this issue, we asked a *ZBrush* legend to reveal the modelling techniques he uses to transform a simple low-res mesh into terrifying creature like the one on the right

BY ZACK PETROC

### FACTFILE

FOR  
*ZBrush 2*

DIFFICULTY  
Advanced

TIME TAKEN  
1-2 days

#### ON THE CD

- *ZBrush 2* (demo and plug-ins)
- *ZBrush 2* video tutorials
- Full-sized screenshots
- ZTL scene files at various stages of model development
- Full-sized final rendered images

ALSO REQUIRED  
*Maya* (or other poly modelling software)

**T**he world of visual effects has been revolutionised by tools like *ZBrush*. Far more accessible than the first generation of modelling software, this organic sculpting package enables artists with limited technical expertise to turn their designs into 3D models, bridging the gap between concept art and final digital product.

As an art director or production designer, *ZBrush*'s ability to rapidly modify an existing model, alter the proportions of a character, or automatically generate the missing half of a symmetrical form, are all great assets. And as a modeller, having the power to create a digital sculpture that captures the essence of your 2D design ensures that your role within a company never gets classified as a mere 'button pusher'.

In this tutorial, I'll explore the process I use for creating a digital maquette from a design sketch. I'll use both *ZBrush* and *Maya*, but you can use your preferred 3D application. The interplay between *ZBrush* and a poly modelling package is crucial to my workflow. Although this tutorial will present the process as a linear one, in practice, it's often iterative - starting with a sketch, moving on to a 3D sculpt and back to a sketch.

Throughout the tutorial, I will explore many of the artistic decisions I make during the course of character development.

Sculpting organic forms relies so heavily on artistic skill that it would be almost impossible to provide a complete step-by-step walkthrough, but this article will at least illustrate the techniques I use. On the CD, I have provided supporting *ZBrush* ZTL files showing the model at different stages of completion for you to explore for yourselves. For the sake of brevity, I've simplified the props accompanying the character, and limited the model to his head, torso and hands.

Although *ZBrush* has quickly gained fame for its ability to add almost infinite levels of detail to a model, unless that detail is applied to a solid foundation, your characters will never appear truly lifelike. In this tutorial, I'll be exploring issues of good practice in anatomical modelling, ensuring that your finished sculpture radiates both life and character. Now throw out your 3D scanner and let's get started!

**Zack Petroc is Art Director at Unit Eleven, and was Model Supervisor on the film *Sky Captain and the World of Tomorrow***  
[www.zackpetroc.com](http://www.zackpetroc.com)





ON THE CD

● ZBrush 2 demo  
plus plug-ins and  
video tutorials  
SEE PAGE 114

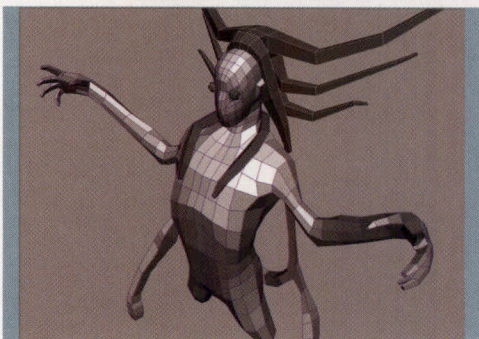




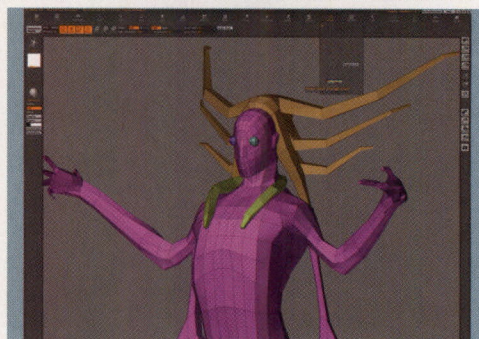
## STAGE ONE | Creating and using a low-res mesh



**01** Once I have a rough idea of the character's personality, I create a handful of quick sketches. Depending on the amount of time available, I explore elements such as muscle tone, facial features, expression, proportion, costume and props. If I'm also doing the design sculpt, I tend to keep my sketches more suggestive, like the ones shown here.



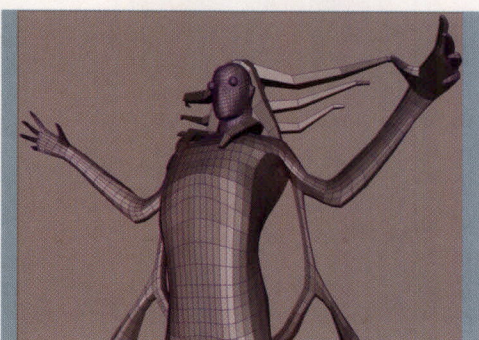
**02** First, create a low-resolution 'block' mesh of the character in your preferred poly modelling package: I'm using *Maya*. Working in this way has three advantages. First, it enables you to check that the scale is correct. Second, you can build the mesh in separate sections. Third, it gives you the freedom to change proportions or adjust the placement of any form you later refine in *ZBrush*.



**03** Combine your poly groups into one mesh and export as a single OBJ file. Import this low-res mesh into *ZBrush*. The only interface setting you'll need to adjust is Mouse Avg, under Stroke. Set this to 4 to keep your brush strokes from skipping across the surface. Also, click the Auto Groups button under Tool > Polygroups. This enables you to view, hide and mask individual objects in your sculpt.



**04** To help acquaint yourself with the potential of this workflow, hide individual sections of the model by double-clicking on them. You can now explore masking and try moving individual parts. (More information about the *ZBrush* interface can be found in the video tutorials on the CD.) One common use of this technique is to mask the eyes so you can sculpt facial details around them.



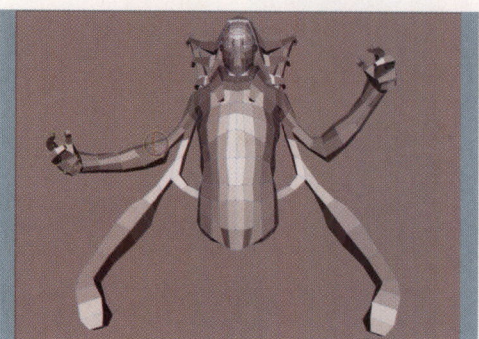
**05** Explore taking your mesh from *ZBrush* to *Maya* and back again. When importing a mesh back into *Maya*, set Create Multiple Objects to 'False' under .obj Import Options or your point order will change. Don't perform any actions that will change your mesh's point order or it won't function properly in *ZBrush*. We'll explore the benefits of transferring your mesh between the two packages later.



**06** You can also add elements to your mesh after it has been subdivided in *ZBrush*. If your *ZBrush* mesh was divided three times, divide the object you want to add in *Maya* three times as well. Combine the objects into one mesh in *Maya*, re-import into *ZBrush* and use Reconstruct Subdiv Surface under the Tool > Geometry tab. You'll now be able to step up and down through division levels.



**07** I also use *Maya* to evaluate proportions and design throughout the sculpting process. As an example, I'm using a more refined head from a later step in the walkthrough. Select a portion of your divided sculpt and export it from *ZBrush*. After importing it into *Maya*, you can use different cameras and lights to evaluate the form, or create quick test renders.



**08** Export your mesh from *ZBrush* at its lowest level of division, import into *Maya* and try re-posing your character. When you're happy, re-import it into *ZBrush*. You'll still be able to step up and down through the division levels. My low-res mesh can be found on the CD as an OBJ file. If you're using the demo of *ZBrush*, you'll need to load in the first ZTL file instead (see page 114).

## EXPERT TIP

## Think before you sculpt

I typically base my character designs on a narrative. Before I begin to draw or sculpt, my first step is to understand the story that my character will be part of. During this process, I try to visualise the character in relation to all the other elements in its world. Next, I gather reference images from a variety of resources, including books, films, the internet and photos. I use these to think through ideas and generate initial concepts. In the case of this tutorial, I used a shamanic character from a project I'm currently working on as my starting point.

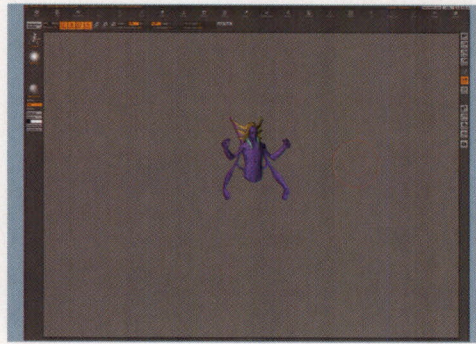




## STAGE TWO | Sculpting the low-res mesh within ZBrush



**09** It's time to start sculpting the mesh within ZBrush. As you do so, work on the entire form from top to bottom - don't dwell in one place. Evaluate how the contour lines of your sculpture relate to one another. Use the Move tool to push and pull parts of your model to make sure that the 'rhythms' (the lines of the character and forms that can be made to flow into one another) are correct.



**10** Make sure you regularly pull back so you're viewing your model from far away. From this perspective, you can judge the proportions more effectively. This is the equivalent of stepping back from a real maquette in order to gain a better perspective on its overall proportions. It's very important not to get too wrapped up in the fine details before these are finalised.

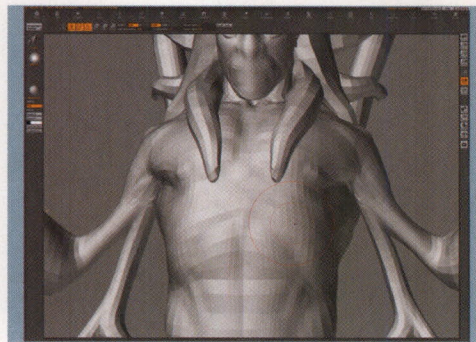
### EXPERT TIP

#### Do the details last

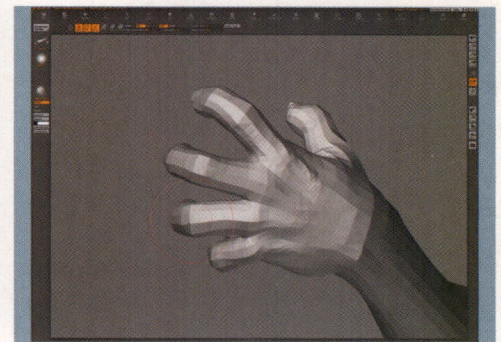
Don't get caught up in the details of the hands, face or any other part of your model, particularly in its initial stages of development. Look at the overall proportions, the gesture and, most importantly, the rhythms of the model. How is the head oriented relative to the torso? Do the forearms have the right amount of curvature? And how does the position of the arms relate back to the torso? Keep asking yourself questions like this as you continue to sculpt, and don't be tempted to add the fine details until you've resolved each issue fully.



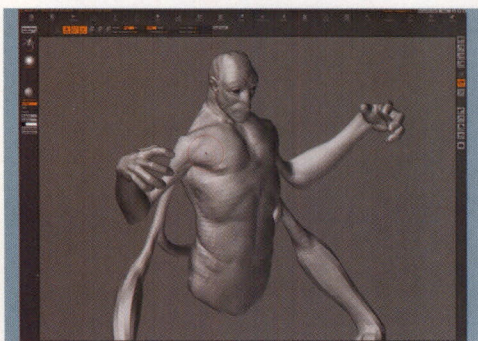
**11** Avoid stepping up in subdivision levels too early. You need to try to get as much detail as you can into the mesh before you do so! I spend as much time as possible avoiding the details so I can concentrate on the proportions, rhythms and gesture of the model. Waiting to divide your mesh will also help you to avoid any 'bumps' in your surfaces as you progress with your design.



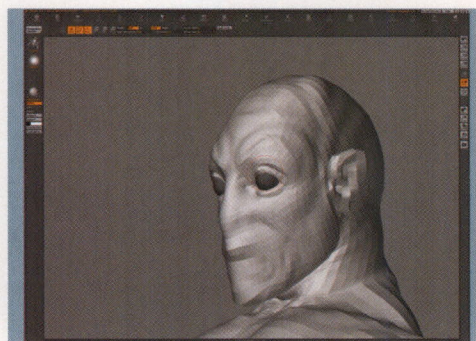
**12** Use the largest brush size possible and make long, broad strokes over the surface to define the form. Evaluate how these lines help to define the rhythms of the sculpture, and ask yourself how all of these lines and forms relate. I alternate between using the Smooth brush and the Standard brush because I find that this enables me to get a much more uniform result.



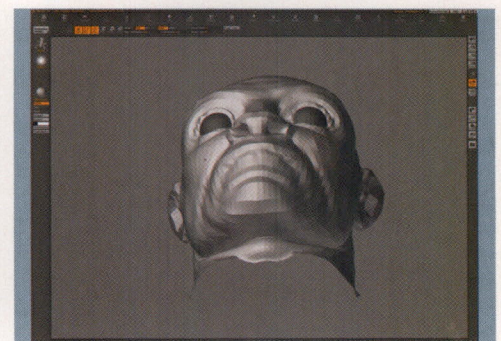
**13** Use the Inflate brush to add mass to the fingers and other thin areas. Try to focus on the gesture that the hand and fingers are making, and avoid details like wrinkles and fingernails. Focusing on the gesture first will ensure that the hand feels completely in keeping with this particular character.



**14** Hide all the extraneous props so you can gain better access to the harder-to-reach parts of your model. This will also enable you to make longer, more flowing strokes that will help you to improve the form development process, and ensure that all of the lines of your sculpture remain fluid.



**15** Mask the eyes and begin to define the area around them. Avoid thinking about details, such as the eyelids and wrinkles, and just focus on the overall form of the face and head. In order to do this, I like to stay at a lower level of division, even when I'm blocking in the facial features, because it forces me to avoid the details of the character's head.

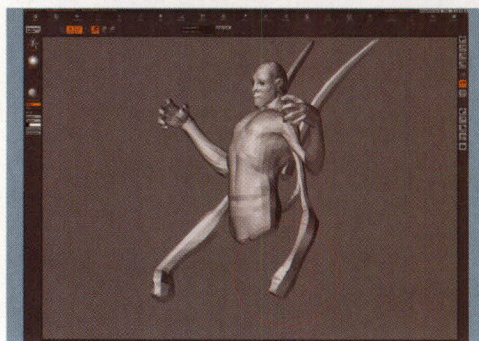


**16** With the eyes roughly in place, I block in the structures of the other facial features. Try looking at the face from underneath the sculpture to better judge the curvature of the muzzle area. This will also help you to determine the relationship of the cheekbones to the nose and the brow.

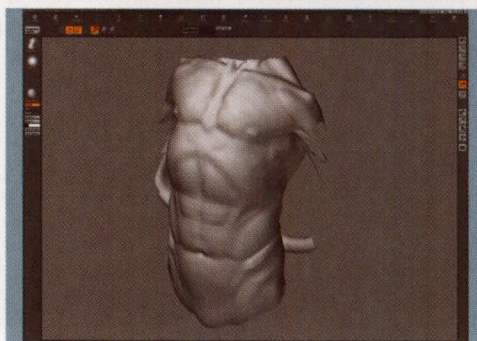




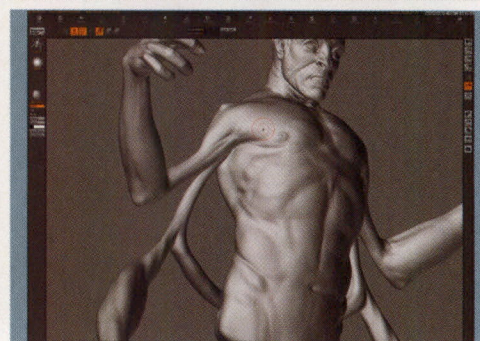
## STAGE THREE | Refining the model



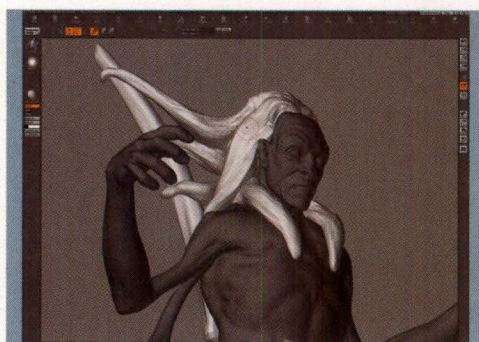
**17** With the rough masses blocked in, I begin to take an even closer look at the proportions of my character and decide which attributes I want to exaggerate or downplay. When using the Move tool to affect these changes, I always step down to the lowest division level possible. In this example, I've exaggerated the length of the forearm to make the character seem more all-encompassing.



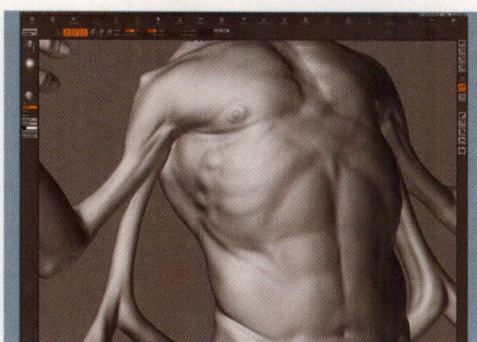
**18** Decide what kind of muscle tone will work best for the model. Even though your character may be fictional, you still need to make creative choices that are going to make sense within your chosen narrative. In this case, the character needs to evoke thoughts of an aboriginal human, which is why I've chosen to give him a thin and rather ropey muscle build.



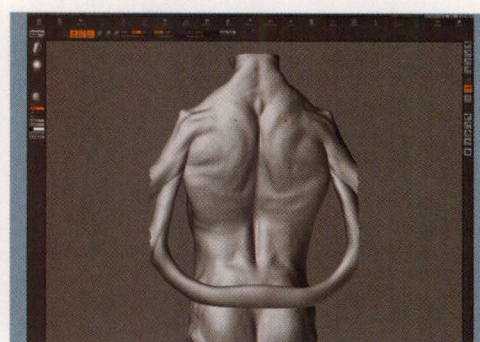
**19** Students often ask me which aspect of anatomical study will improve their sculptures the most. For me, it was more important to learn the origin and insertion of each muscle than memorise their names. If you know where they start and stop, developing the area in between them becomes a much simpler task. A good reference is *Constructive Anatomy* by George B. Bridgman.



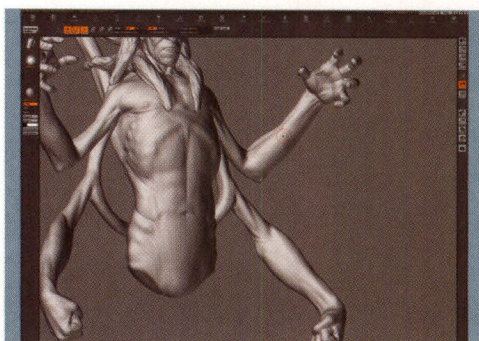
**20** Develop the costume at the same rate as the rest of your model. Treat each prop as a character by evaluating its overall form relative to the entire sculpture. Take the same approach as you did for the figure and don't start working on the details too early.



**21** When developing the sculpture, I evaluate the muscles as larger groups and combined forms, as opposed to sculpting each individual muscle. Spend time studying the orientation of these masses, as well as their start and end points. Notice how the larger forms that make up the muscle groups of the chest insert under the mass of the shoulder muscle on the arm.



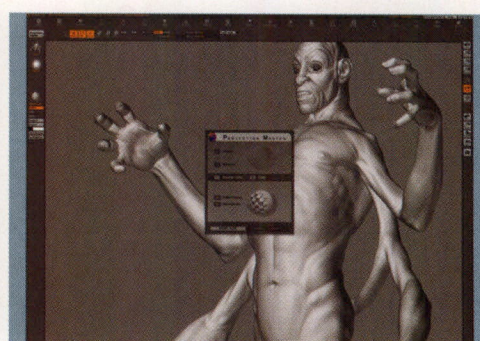
**22** Approach the back in a similar fashion. Notice how the mass of the trapezius coming down from the neck fits within the triangular forms of the shoulder blades. Block in these overall masses first so you can quickly evaluate their relationships to each other and make any changes where necessary.



**23** As you refine your sculpt, it will naturally want to become more rigid and lose the fluid curves and rhythms that you've been working so hard to develop. However, you have to make sure you don't let them disappear! At this stage, it's essential that you keep evaluating the overall form and revisiting the sculpture in order to keep the gesture flowing.



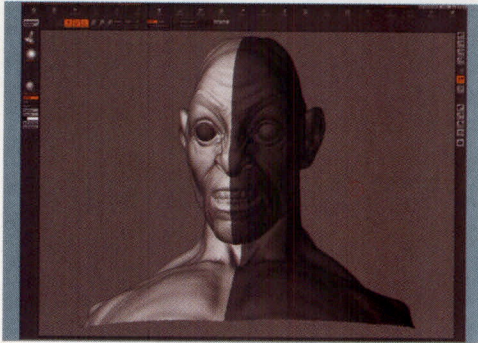
**24** Begin to refine the details of the face, but take care not to try to insert them by force if the mesh isn't yet dense enough to represent them. Instead, try to continue to develop them at an even pace with the rest of the sculpture. At this point, I take the time to look at my reference materials again, because this helps me to make sure the face isn't becoming too generic.



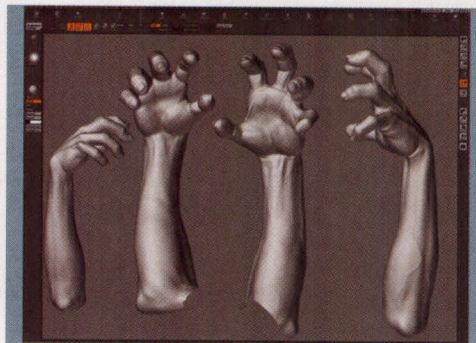
**25** You now need to use the Projection Master function to refine each of the details you've already defined. I don't use this function to sculpt, only to finalise the creative decisions I've already made. Projection Master also becomes very useful when your mesh is fairly dense and your brush won't interact smoothly with it.



## STAGE THREE (Continued) | Refining the model



**26** I use Projection Master to finalise one side of the face, then I mask half of the head and use Smart ReSym under the Tool > Deformation tab to mirror those details. I use Smart ReSym on the majority of the sculpture, then alter the symmetry at a later stage so that the model looks more natural.



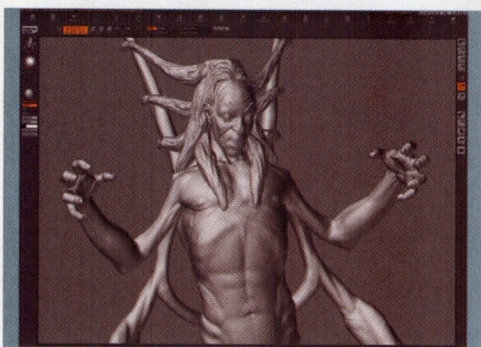
**27** This image shows the difference a good gesture can make to the final outcome. You should always be willing to re-evaluate the pose and proportions of your model and make changes. Here, having initially sculpted the hands (left of screenshot), I went back to my reference images and used a mirror to see how they could be improved (right). This principle applies to the entire sculpture.

## EXPERT TIP

## Keep un hiding hidden parts

It's a good idea to keep hiding individual parts of your sculpture while you're modelling, as this makes it easier to interact with the model and improves machine response time too. However, you also need to make sure you unhide everything from time to time. You need to keep checking how the details sit within the model as a whole, and viewing it as a whole will enable you to evaluate the relationships of the individual parts to one another. This will also enable you to make sure that parts aren't interpenetrating each other incorrectly.

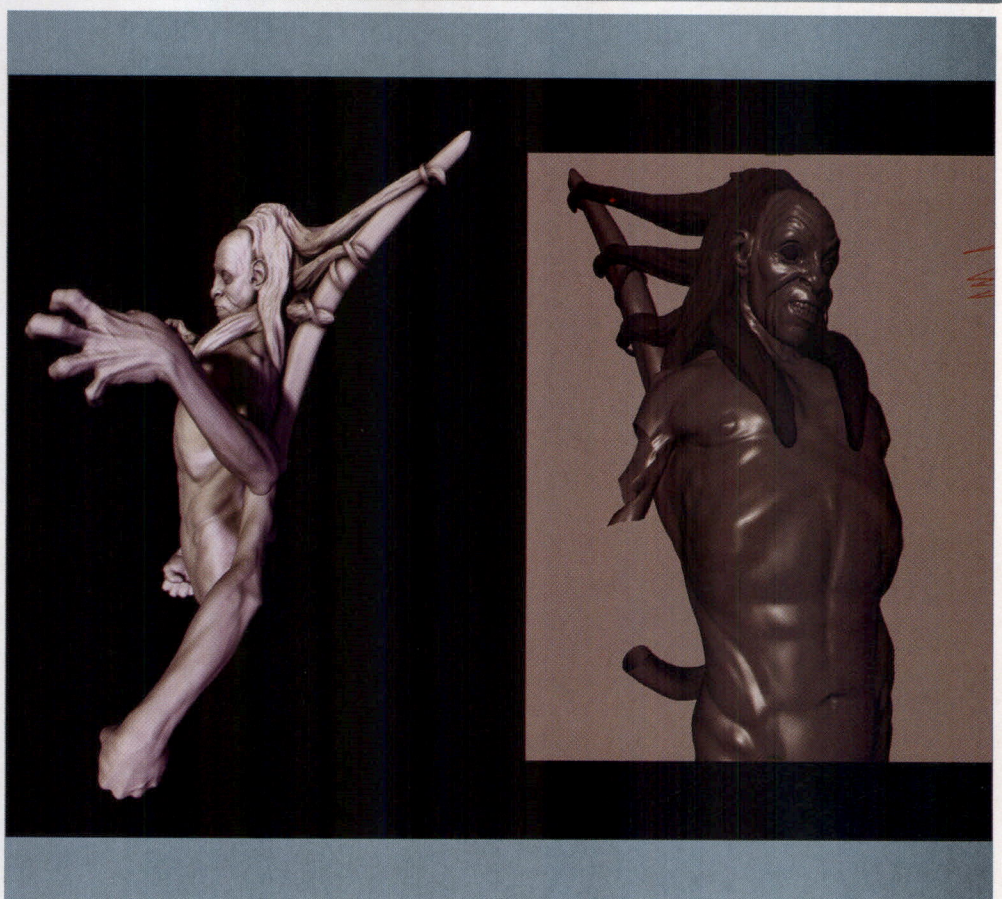
## STAGE FOUR | Presenting your work



**28** One of my final steps when sculpting is to pose the character. Export a low-resolution version of your sculpture from ZBrush, import it into Maya (or your preferred poly modelling package) and rotate the hips, head, shoulders and arms to break up its perfect symmetry. Bring the model back into ZBrush and continue to push and pull with the symmetry off.



**29** To generate maps for the next artist to work on a character, I assign Auto UVs in ZBrush. With UVs in place, take your mesh back to a lower level of subdivision and generate displacement maps. The only setting I change at this stage to create the maps is the Subpixel Accuracy, which I set to 1 under the Tool > Displacement tab. I typically generate a 4k map.



**30** Now that you have your displacement maps, the most important thing to know is that you don't have to use them! Try exporting your mesh, or parts of it, at higher levels of subdivision, importing them into Maya and creating a few test renders. These are usually more than adequate to convey the concept. If you do have to use levels of detail that create OBJ files too large to import into your

poly modelling software, try applying the map as a bump map to a mesh with a level of division that it can handle.

Your model should now be ready to hand over to the next artist in the production pipeline. To show additional design options, I've also used Maya to add extra details, such as the straps holding the head-dress to the structures on the character's back. ●



## TRADE SECRETS

# The wire technique

Cover artist Meats Meier explains the 'wire style' modelling technique used to create his signature ZBrush imagery

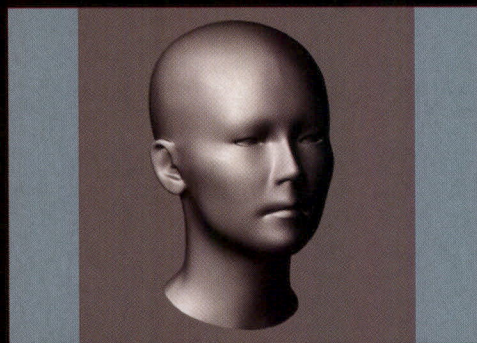
**M**y illustration tool of choice right now is *ZBrush*, because of the immense level of detail that it can add to images. It's a software package that can be used in an artistic way, yet one that provides all the technical power you could want. It's also extremely fast for both sculpting and rendering, making it an ideal choice for 3D modellers and illustrators alike.

The reason why *ZBrush* is so good at creating complex images like the one on the right is its unique Pixol technology. Once a 3D object is placed onto the canvas, it is converted to Pixols (basically pixels on steroids, able to hold depth and material information). At this point, it can no longer be rotated. But now that your geometry is converted into '2.5D', you can add an incredible amount of detail to it, safe in the knowledge that your computer will not slow down, and that rendering times will still be minimal.

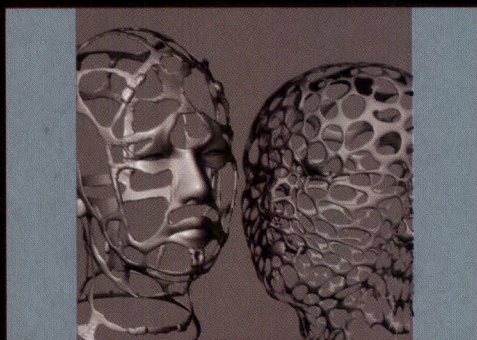
To create this illustration, I used my own 'wire style' technique. This involves assigning a black-and-white texture to a base model in order to mask parts that I want to be deleted. Pressing the 'Int' button in the Tool > Masking palette masks the areas of the object that are textured with the darker colours. Once the areas have been masked, they can be hidden by hitting the 'HidePt' button, before the 'Del Lower' button in the Geometry section of the Tool palette permanently deletes the hidden faces. To get thickness into the model, I store a morph target, inflate the geometry outwards, and press 'CreateDiff' in the Morph Target section.

In this way, I can convert a solid model into one which looks as if it has been created out of wire. By creating several different variants of differing sizes, and overlaying them on separate layers, I can quickly build up the complexity of the image. I then add extra detail with the large selection of 2.5D tools, and finally render a completed print-ready image directly in *ZBrush*.

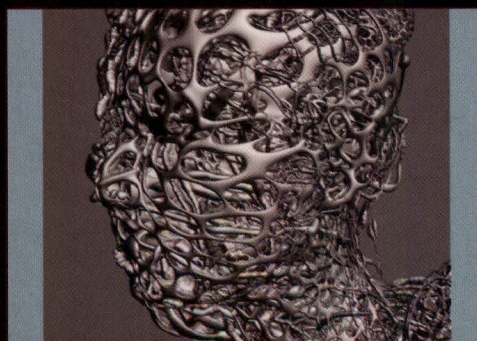
**3D virtuoso Meats Meier is an artist in residence at the Gnomon Workshop, where he creates instructional DVDs as well as his own personal artwork**  
[www.3dartspace.com](http://www.3dartspace.com)



**01 THE BASE FORM** I begin with a completed model with an intact surface. In this case, it's a 3D head that I created for another project. It can be beneficial to create the model with ZSpheres, as the created texture layout is preferable for use in Step 2 because of the clean, straightforward way that the UVs are laid out for the object.

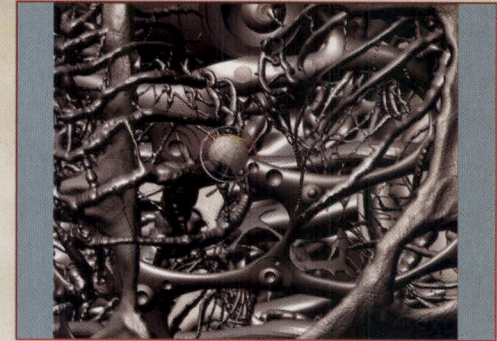


**02 CREATING THE PARTS** To create the different component parts of the image from the base form, I mask sections of the model, hide the masked areas (Tool > Masking > HidePt), then delete the hidden sections (Tool > Geometry > Delete Hidden). To give them thickness, I store a morph target, inflate the geometry outward, then create a difference mesh (Tool > Morph Target > CreateDiff).



**03 COMPOSING THE IMAGE** Composing the image involves placing one of the objects on the canvas and marking its position in 3D space using the multi-marker tool [M]. Once marked, another component can be drawn onto the marker and fitted into the correct place. If it doesn't fit, I use the transformation tools. Each component should be placed into its own separate layer (Layer > Create).





**04 PLACING PRIMITIVES** Primitives can be created and placed on the canvas to add detail to an illustration. Now that the image is 2.5D, other tools can be used to add or delete from the form. Primitives in *ZBrush* can be themselves be masked and inflated to create unlimited quick, yet detailed, forms that provide extra visual complexity.



**05 ADDING DETAIL WITH 2.5D BRUSHES** *ZBrush* provides many 2.5D tools that can be used to add final detail to a piece of art. The Bump brush is a great example of this: fine detail can be applied to Pixels that follow the surface of a creation. Also, be sure to try out each of the image processing brushes, which are similar to *Photoshop* filters and can be used in individual areas.



**06 POST PROCESSING** A final and extra step, I often grab the depth of a scene to use as an alpha channel in a 2D imaging package such as *Photoshop*. Pressing the Alpha > GrabDoc button will create a black-and-white depth-based image that can be saved to a hard drive by pressing 'Export'. (I advise flattening all layers before you do so!) This can be used to create depth of field or fogging effects in an image, which helps to give a sense of depth.





## OTHER ISSUES

### Issue 70: Part 1

Understanding real-world lighting; basic CG light types

### Issue 71: Part 2

Advanced lighting tools, such as image-based lighting

### Issue 73: Part 4

Lighting an interior scene and an exterior scene

Order back issues: page 101

## LIGHTWAVE 3D

# Get started in CG lighting **Part 3**

To produce truly realistic renders, CG lights must be made to behave like real-world lights. In the third of our series of beginners' tutorials, we explore two time-saving tricks for making them do so

BY NICHOLAS BOUGHEN

## FACTFILE

### FOR

LightWave 3D

### DIFFICULTY

Elementary to intermediate

### TIME TAKEN

45 minutes

### ON THE CD

- Full-sized screenshots
- Base model (LWO format)
- Start and finish scene files
- JPEG images used in the scene files

### ALSO REQUIRED

N/A



Regular readers of *3D World* will be familiar with this series of tutorials, introducing you to the fundamentals of CG lighting. Each one tackles a different part of the subject, focusing on

*LightWave 3D* but using principles that can be applied in many other programs. All the files you need are provided on the CD.

In parts one and two, we looked at the five light types available in *LightWave 3D*, explained how to use a simple four-point lighting rig, and got to grips with image-based lighting. This issue, you'll discover how to make CG lights act more like real light, using two common tricks to avoid the increase in render times that this would otherwise entail. The final instalment will show you how to analyse and set up simple indoor and an outdoor lighting environments.

So how do CG lights differ from their real equivalents? In the real world, all light sources have size and radiate light from their entire luminous surface: the filament, tube or flame. In contrast, *LightWave's* Point and Spot lights radiate light from a single point (a cheap but inaccurate render trick). Distant lights don't radiate light at all – their rays are parallel, not physically accurate. Linear lights emit light from

a line, and Area lights emit light from a plane. The result is that Point, Spot and Distant lights create unrealistic hard-edged shadows; Linear lights create shadows that are hard along two axes and soft along the third; while Area Lights create the most natural and physically correct shadows – but only at the expense of render speed.

So if you don't want to wait for Area lights to render, how do you force the other, faster lighting tools to behave more like natural lights? In a nutshell, you take each light type and use it in such a way that adds in the missing properties. This article will cover two such techniques: first, the celebrated 'spinning light trick', and second, by combining Point or Linear lights into an array. In each case, the result we are seeking is shadows that are hard-edged where the object casting them touches the ground, and soften as it moves further away.

Nicholas Boughen is CG Supervisor at Rainmaker in Vancouver. His work includes *Dead Like Me* and *I, Robot*. He is the author of *LightWave 3D Lighting*, and training videos for KURV studios. [www.rainmaker.com](http://www.rainmaker.com)



## STAGE ONE | The spinning light trick

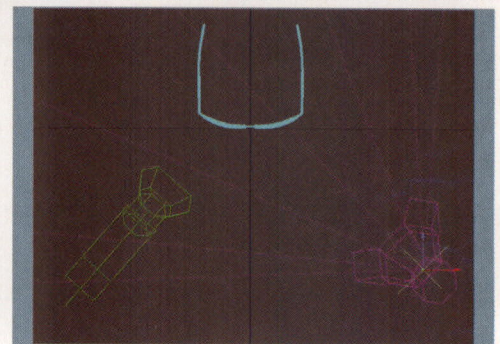
## EXPERT TIP

## Spinning light: an overview

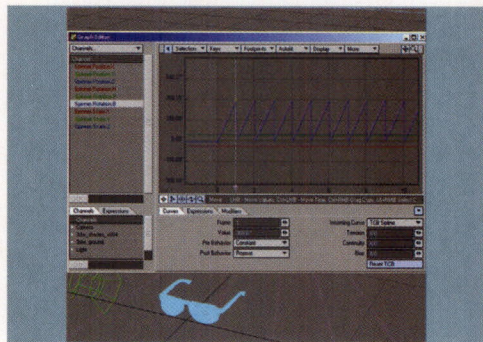
This trick uses motion blur to soften hard-edged shadows cast by light types that normally create them. To do this, we need to attach the light to a null and rotate it through 360 degrees once every frame. Since each frame is rendered in several passes to create the impression of blur, the light position will change with each render pass. (If we render 5-Pass antialiasing, the light will render in five different positions.) Once these different passes are overlaid, the motion-blurred hard shadows blend together to form a single, natural-looking soft shadow.



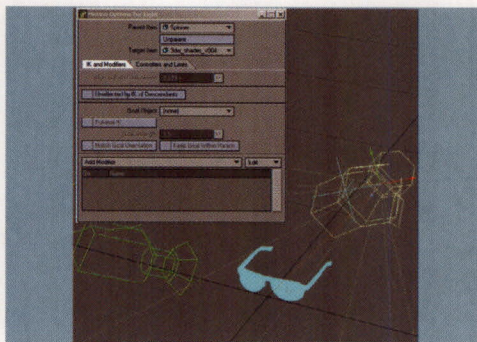
**01** To begin the tutorial, open the start scene file, 3dw\_LWLighting\_part3.lws, from the CD. When you open the classic Scene Editor from the upper left of the Layout interface, you will notice that the Spot light is parented to a null called Spinner which is not yet moving. Hit [F9] to render out a still frame of the scene.



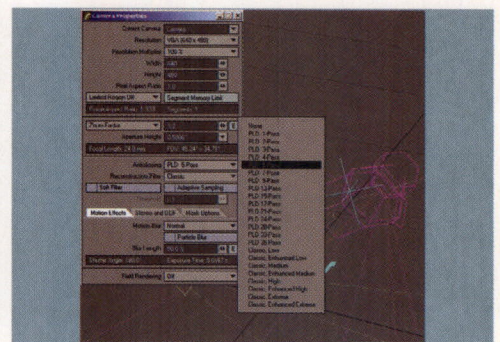
**02** Clear the Render Status window by clicking on Abort or Continue. Now hit [Z] to enter Top View. You can see that the light and the Spinner null occupy the same position. Be sure that you are on frame 0. Select Lights mode from the bottom left of the interface. Type [T] to enter Move mode and type in an X value of 32mm. If you do not have Autokey on, set a key by hitting the [Enter] key twice.



**03** Enter Objects mode by typing [O]. Select the Spinner null from the Scene Editor and advance to frame 1. Type [Y] to enter Rotate mode. Now enter a Bank value of 360 and set another keyframe. Open the Graph Editor by pressing [Ctrl]+[F2], select the Spinner.Rotation.B channel and set Post Behavior to Repeat. As you can see in the graph, the light will now rotate 360 degrees every frame.



**04** Now select the light again from the Scene Editor and press [M] to open the light's Motion Options panel. Near the top of the panel you will see a drop-down for 'Target Item'. Select the object 3dw\_shades\_v004 as the Target Item. The Spot light will now always point at the sunglasses, and a dotted, orange target line has appeared. Before continuing, be sure that you are on frame 1.



**05** Open the Camera Properties panel by selecting the camera and hitting [P]. Halfway down the panel, set Antialiasing to PLD 5-Pass. This will give us five interpolated light positions. Set Motion Blur to Normal and render by pressing [F9]. To speed up our initial renders, open the Render Options panel and turn off Ray Trace Reflection, Ray Trace Refraction and Ray Trace Transparency.



**06** Because we are only using five render passes, you can clearly see the shadow lines from each one. To improve the effect, we need to increase the number of passes. In the Camera Properties panel, set Antialiasing to PLD 15-Pass and re-render. You can soften the shadow edges by increasing Shadow Fuzziness on the Light Properties > Shadows panel. Set it to 3 now.



**07** The shadow lines have blurred to create softer shadows. These look much the same as shadows of Area lights, but in a fraction of the render time. You can also make the light source appear larger. Moving the Spot light away from the Spinner increases the area of the 'virtual' Area light. Select the light and set the X position value to 100mm. Set a keyframe at frame 0 and re-render.

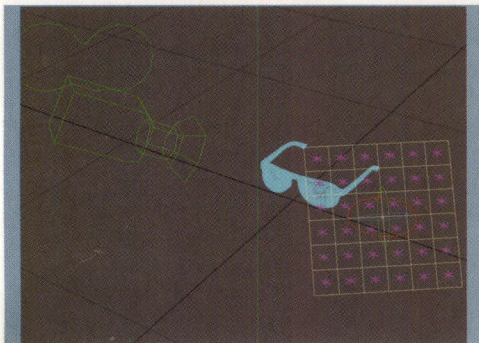


**08** Note that as the shadow becomes softer and wider, more antialiasing passes are needed to 'hide' the shadow lines. Numerous variations of this spinning light trick have been used for at least 15 years, and it was invented long before Area lights existed. It is still used regularly in TV and feature films. To see the completed scene file, open 3dw\_LWLighting\_part3\_finished.lws from the CD.





## STAGE TWO | Light arrays



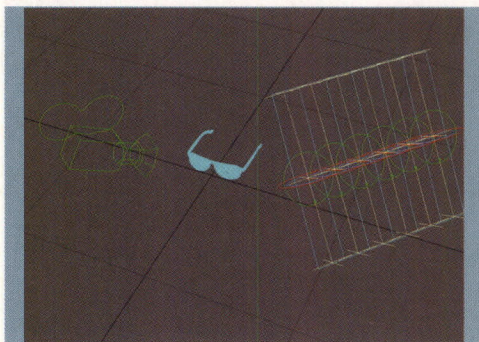
**09** Now load `3dw_LWLighting_part3_point_array.lws` from the CD. This array of Point lights was created using Luxigons - a very quick tool for this kind of job. For details, consult the manual. Alternatively, you can simply clone and manually place lights until they are all in the desired position. Be sure that all lights are parented to a null or other item so they can be moved as one light.



**10** Press [F9] to render and you will see that the Point lights work together to act like a single Area light source. Since there are 36 lights in this array, each light has an intensity of four per cent, totalling 144 per cent light intensity. Now, pick one of the Point lights and turn its light intensity up to 144 per cent. Turn all the other lights off.



**11** You can see that the behaviour of a single Point light is significantly inferior to an array. The trick here is to use as few Point lights as possible to achieve the desired shadow quality. If you make an array of a thousand point lights, it will probably take just as long as an Area light to render. Remember: the reason for using these tricks, rather than a real Area light, is to reduce render times.



**12** Linear lights can also be used in an array. Open the scene `3dw_LWLighting_part3_linear_array.lws`. There are six Linear lights in use here, again created using Luxigons. Because the main deficiency of Linear lights is their lack of width, we have compensated for this by placing them parallel to one another. Now press [F9] to render out the image and you will see a similar shadow result to the Point light array render.



**13** This render shows the main weakness of an array that contains too few lights. If you look at the foreground shadow, you can see a shadow line for each Linear light. Adding more lights will help this, as will using the spinning light technique shown in the first part of this tutorial. Alternatively, you might simply 'jitter' the array, rather than actually spinning it.



**14** An Area light was used for this final render. Comparing this image with the others, you will see that the shadow properties are quite similar. Although a real Area light will almost always generate higher-quality results than the tricks shown in this tutorial, the render times will be much longer. There are many instances when you can get away with lower-quality arrays,

whose speed may make all the difference when it comes to either delivering your project on time or losing a client forever. These techniques are just two of many possible variations that could be employed to save valuable hours at deadline - resourceful 3D artists will know that it's wise to keep on looking for ways to render more quickly, and it's best to render only to the quality level required (never higher!). ●





# Win a 3D Total texture collection

Enter this issue's competition and be in with a chance of winning one of five high-quality Total Textures Collections, each one containing 14 CDs and a DVD



3D Total is offering five sets of its 15-disc texture collections to readers of *3D World*. Each disc is built using a HTML interface that will run in any web browser on any platform, and contains hundreds of full-quality JPEG files.

The collections are royalty-free for use on any project, and can be modified to suit your needs. Bonus features include images created using the textures, tutorials and project overviews.

The complete set contains 14 CDs and one DVD, and usually retails for £435 / \$855 / €630. They're used by 3D and 2D artists all over the world, from individuals to larger studios such as Disney, Electronic Arts, Rockstar North, Namco, Team 17, Acclaim Studios, Rare Ltd and Sony Pictures Imageworks. The full set contains:

- **V1 GENERAL TEXTURES** Hi-res seamless textures covering a wide variety of subjects, including many bonus features.
- **V2 AGED & STRESSED** Meets the demand for stressed, aged, damaged and dirty textures.
- **V3 BASES & LAYERS** Base textures for building up layers or applying straight to surfaces such as stone, plaster or concrete.
- **V4 HUMANS & CREATURES** The textures here range from natural, realistic eye, skin and hair textures to bizarre creature skins.
- **V5 DIRT & GRAFFITI** Dirt masks/maps and graffiti. Great for use as a mask to mix two textures together, or for extra detail.
- **V6 CLEAN TEXTURES** These squeaky-clean textures have little or no aged and stressed elements.
- **V7 SCI-FI TEXTURES** The textures on this CD range from Exterior Spaceship to decals and damage maps.
- **V8 VEHICLE TEXTURES** From tyre bump maps to cool flame decals. Head here for alloy wheels, brake calipers, dials and more.



● To enter the contest, name the texture set used on this image

Image © Marco Weiss

## TERMS AND CONDITIONS

These rules include any instructions set out in the terms of this competition. By entering this promotion, the entrant will be deemed to have read and understood these rules and instructions and to be bound by them. Employees of 3D Total, Future Publishing Limited, or any other person directly connected with the offer or their immediate family will be ineligible to enter. Persons under the age of 18 may only enter with the consent of a parent or legal guardian. Any entry that is incomplete, illegible, late or otherwise does not comply with the rules may be deemed invalid by the sole discretion of the Editor. Proof of sending an entry will not be deemed to be proof of delivery. The winners will be notified as soon as they have been ascertained, and the results published on the *3D World* website. The Editor's decision on all matters affecting this offer is final and legally binding. No correspondence will be entered into. The closing date for this competition is 8 February 2006.

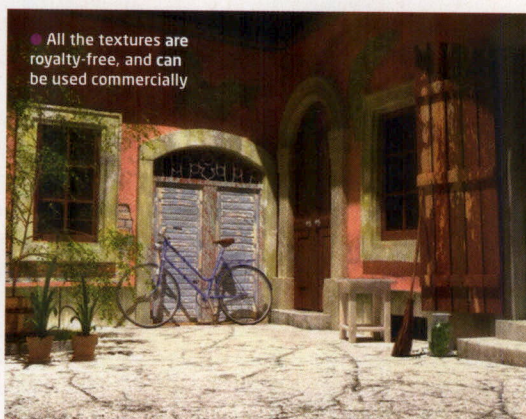
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Image © Ferenc Haraszti



● All the textures are royalty-free, and can be used commercially

- **V9 ANCIENT TRIBES & CIVILISATIONS** Aztec, Japanese, Medieval, Greek and Roman, Celtic and Viking, African and more.
- **V10 TREES & PLANTS** This DVD has trees, plants, grasses and leaves, each one with its own alpha map for easy placement.
- **V11 ALIEN ORGANIC** From the weird and slimy to more subtle, toned skins – like nothing you will have ever seen before.
- **V12 AROUND THE WORLD VOL 1** Mostly architectural textures derived from original photography.
- **V13 AROUND THE WORLD VOL 2** Part two of 3D Total's collection of architectural textures from around the world.
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Which Total Textures CD would be used to texture the image of the car shown above?

- a) V2 Aged & Stressed
- b) V8 Vehicle Textures
- c) V9 Ancient Tribes & Civilisations

## TIE-BREAKER

"If 3D Total were to make a new V16 texture collection, what theme should it have?" (complete in 20 words or less)

Email your entry to [cdsupport@3dtotal.com](mailto:cdsupport@3dtotal.com) with '3D World Competition' as the subject line, and include your name, address and telephone number. The five best winners will be selected on 9 February 2006 and notified via email by 3D Total. Meanwhile, for more information on 3D Total products, visit [www.3dtotal.com](http://www.3dtotal.com).





# LIPSYNC MASTER Powers of speech

The full software on our CD isn't just for animating mouth movements. Thanks to LipSync Master LE, you can also make the gekko character above tap his foot - or even change colour - in time to dialogue! **BY STEVEN WATERS**

## FACTFILE

### FOR

*LipSync Master*

### DIFFICULTY

Intermediate

### TIME TAKEN

30-90 minutes

### ON THE CD

- *LipSync Master LE* for *Maya*, *3ds Max*, *LightWave 3D*, *XSI* and *Cinema 4D*
- Video tutorials
- PDF manuals
- Gekko model (MB and FBX formats)
- Gekko audio file
- Gekko speech text file
- Full-sized screenshots

### ALSO REQUIRED

*Maya* (or other compatible 3D package)



In this tutorial, we're going to introduce you to *LipSync Master*, the new high-end lip-synch software from Letterbox Animation Studios.

With *LipSync Master*, a user can import dialogue as an audio file and use this to generate matching animation data for export to one of the big five 3D packages: *Maya*, *Softimage XSI*, *3ds Max*, *LightWave 3D* and *Cinema 4D*.

The result is that realistic-looking facial animation can be created without the need to keyframe each mouth position by hand. Provided that you have a pre-built character model on which blend shapes have been set up, *LipSync Master* will do the rest!

But what really sets *LipSync Master* apart from its competitors is its ability to take you beyond merely synching your model. With this application, using the phoneme curve data to animate your character's mouth is simply the tip of the iceberg.

In fact, *LipSync Master's* curves can be used to trigger any kind of response whenever a character speaks a certain phoneme. For example, you can use the data to animate geometry deformers to trigger blinks, squints or nervous twitches; control bones, fluids or cloth; or animate particles so that a character breathes smoke or fire!

Over the course of the next three pages, we're going to show you how to use *LipSync Master* to lip-synch the gekko character

above (or 'Gekko', as we've christened him) to a line of speech. We will then use the same data to change the colours of the beads on his head, and to make him tap his toe in time to the dialogue.

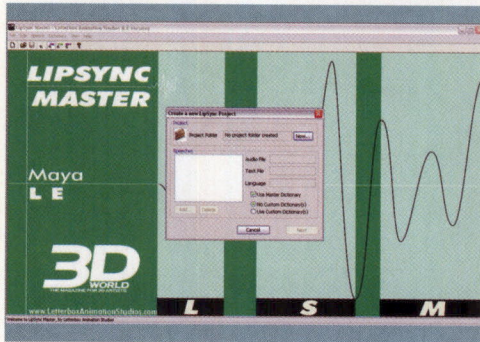
On the disc, you will find a full copy of the learning edition of the software, *LipSync Master LE*. Before you begin, familiarise yourself with the product by looking at the accompanying video tutorials. PDF manuals are also provided, along with all of the project files you will need to complete the tutorial.

For the purposes of the walkthrough, we will be importing the phoneme curves into *Maya*, and finishing the animation there. If you use another 3D package, the procedure is identical up until Step 10: simply follow the instructions given in the appropriate software-specific version of *LipSync Master LE*. If you get stuck, the LE project file (Gekko.lex) can be found on the CD. The model is also supplied in software-neutral FBX format: for more information on how to apply the phoneme data to a model in your own 3D package, refer to the manuals and video tutorials provided.

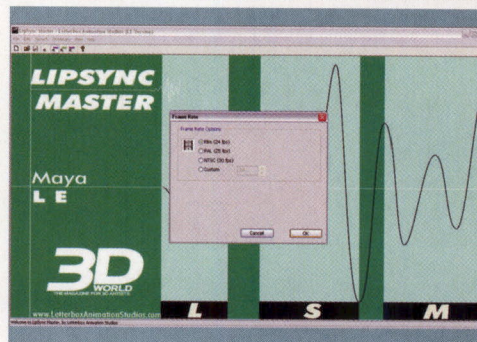
Steven Waters is the founder of Letterbox Animation Studios and creator of *LSM*. He started at Atari before moving to the more formal IT arena in Europe, Asia, Africa and the US.  
[www.LetterboxAnimationStudios.com](http://www.LetterboxAnimationStudios.com)



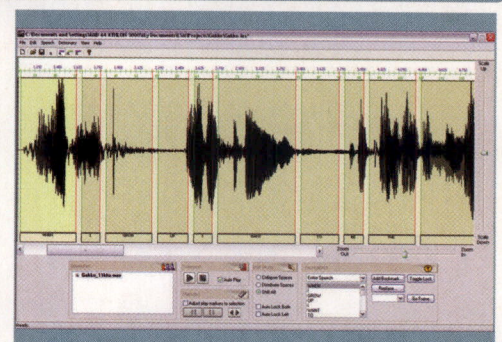
## STAGE ONE | Project set-up



**01** To begin, gather the resources for this project from the CD. Launch *LipSync Master LE*. You'll see the New Project wizard. Create a Project Folder for the Gekko called 'Gekko' using the New button. Load the recorded Gekko audio file by clicking on Add. Select the speech text file for the Gekko (Gekko\_Speech.txt) and, on the Select Custom Dictionary prompt, click Cancel. Now click Next.

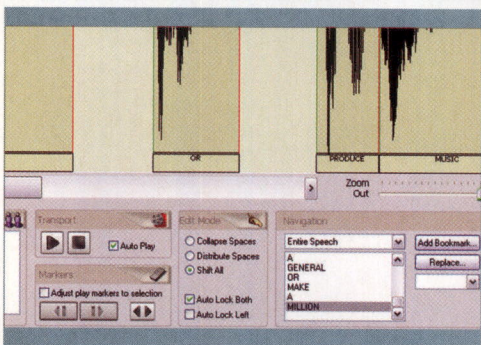


**02** Select your Frame Rate (we're using 24fps) and click OK. Select your exporter. Depending on which version of LSM LE you install, you can opt for *Maya*, *3ds Max*, *Softimage XSI*, *Cinema 4D* or *LightWave 3D*. For the purposes of this tutorial, we'll be working in *Maya*. Select your interpolation method. This is how curves blend into each other (view the videos on the CD to learn more). Click OK.

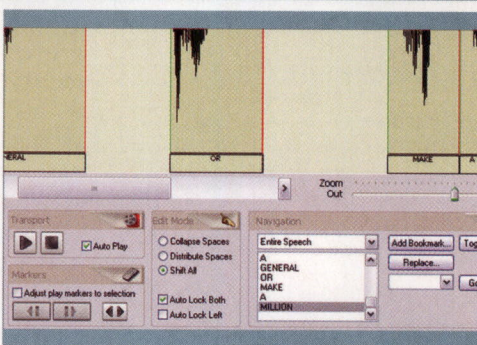


**03** The main panel is divided into three main areas: the Waveform Panel, Speech Panel and Navigation Panel. In the Waveform Panel, you'll see word blocks from the Gekko speech text file you've just loaded, with each word beneath it. For more on the panel features at the bottom of the screen, consult the video tutorials or PDF manuals. You're now ready to start lip-synching the Gekko.

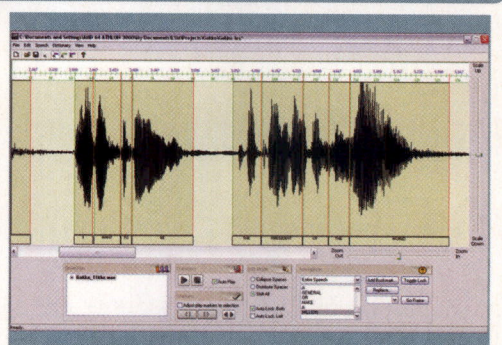
## STAGE TWO | Synching audio



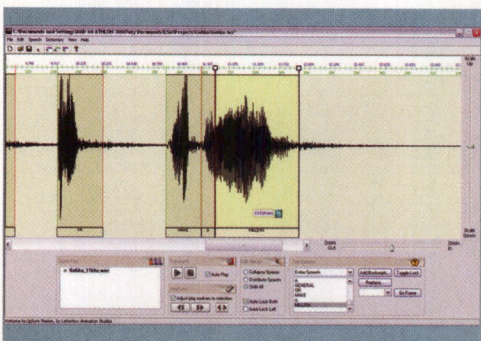
**04** To start lip-synching, you need to align the word blocks to the audio. Click on a word block and drag it until it lines up with the appropriate part of the waveform. When you click on a word or release it from being dragged, the section of audio that the word block covers is played. Repeat this process of clicking and dragging to line up all words in the speech.



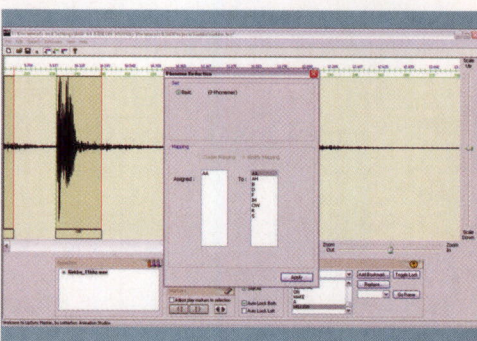
**05** Try the various edit modes available to make lip-synching easier. Collapse is the primary mode. It collapses spaces between words until they bump into each other. When you've finished synchronizing the first word, [Ctrl]-click to lock it. This prevents it from being bumped around. Use Auto Lock to lock words surrounding the selected word.



**06** You can expand the word blocks to fit your audio. The word blocks for the Gekko's speech are sized according to default lengths for each phoneme. To change the word block width, go into Boundary Edit Mode by right-clicking on a word. You can then resize the word by dragging on the left or the right half of the word block.



**07** Check your work before you export. Ensure all words are lined up with the speech. From the Navigation Panel, select Entire Speech. You'll see the entire speech in the box. Ensure Auto Play is checked. Select the first word in the speech and it will play back. Use the down arrow key to play the next word. Keep doing this until you reach the end of the speech, and that's it - you're done.



**08** Synching over, you'll need to choose a phoneme mapping. Go to File Menu and select Phoneme Reduction. *LipSync Master LE* allows for 'basic-9' mapping, which maps the 39 phonemes available in *LipSync Master Professional* to a simplified set of nine. This means you only need nine blend/morph shapes for your geometry and LSM will export nine phoneme curves. Click Apply.

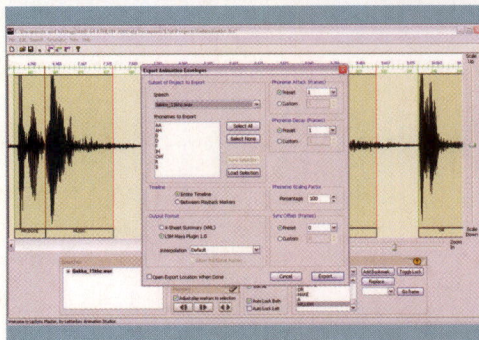
## EXPERT TIPS

- You can create bookmarks to return to specific parts of your speech, so that you can rework them until you're satisfied. In the Navigation Panel, select Add Bookmark.

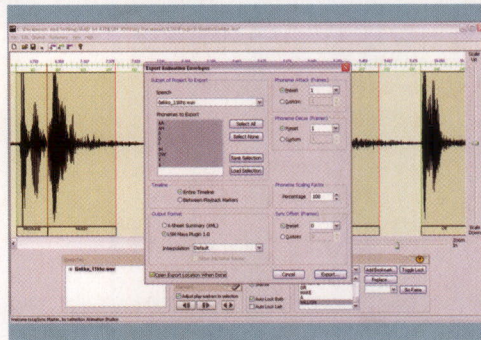
- If you have a slow PC, you can change the graphical accuracy of your waveforms to speed up the user interface. Record audio in 11kHz, then, in postproduction, replace it with the 48kHz version.

- Know what frame rate you'll be using before you start lip-synching. *LipSync Master* supports film, PAL, NTSC and custom frame rates.

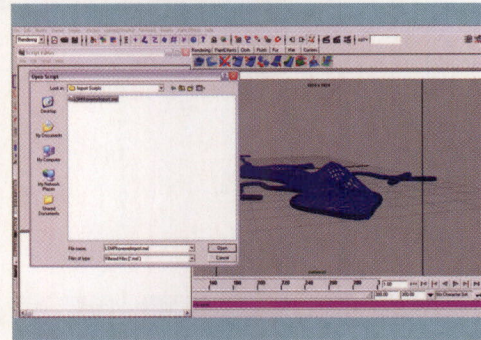


STAGE THREE | Exporting *LipSync Master* phoneme curves into *Maya*

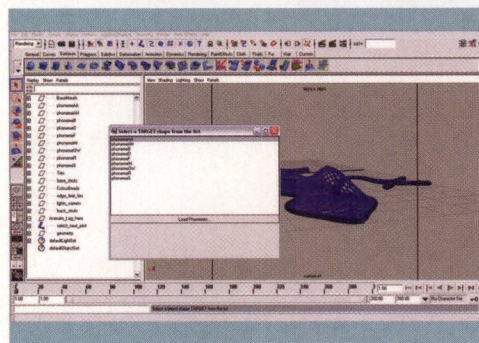
**09** Select Export from File Menu. The Export Animation Envelopes window tells you which speech you're going to export from and which phonemes you're going to export. Click Select All to export all nine. Check Open Export Location When Done before you click Export. Phoneme curves are stored as individual files and contain occurrences of each phoneme along the timeline.



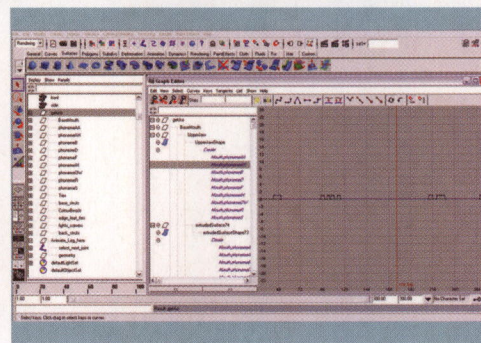
**10** There are other export options on the Export Animation Envelopes window, such as Phoneme Attack, Phoneme Decay and Phoneme Scaling that allow you to modify the expressiveness of each phoneme by scaling the phoneme maximums. For details of all export options, see the video tutorials or PDF manuals. Now it's time to apply the exported phoneme curves to the Gekko model.



**11** Load *Maya* and open *Gekko.mb* from the CD. Load Gekko phoneme curves by clicking the Script Editor icon. Select Open Script and open LSM phoneme import.mel. Select Execute to run the script and close the Script Editor window. In the Phoneme Import window, select Blend Shape Node and Next. Go through the list of shapes one by one clicking Next > Load Phoneme Data.

STAGE FOUR | Integrating with *Maya* and animating colour changes

**12** Once you've loaded all the blend shapes, close the Load Phoneme dialog window. Your Gekko model and your phoneme curve data is now loaded into *Maya*. This means that the process to animate your Gekko's mouth is now complete. Go to Playback Controls and click Play. You'll see the Gekko's mouth animate as he speaks.



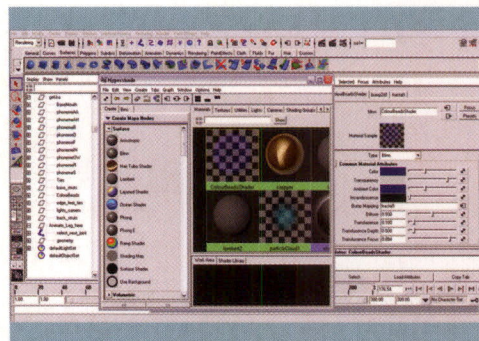
**13** Let's look at what we've done in a different way. Select Gekko from the Outliner. Go to Window > Animation Editors > Graph Editor. On the left, you'll see the blend shapes. On the right, you'll see the phoneme curves imported from *LipSync Master*. Should you wish, you can access the phoneme curves in the Graph Editor to scale, move, delete or adjust tangents in any way you choose.

## EXPERT TIP

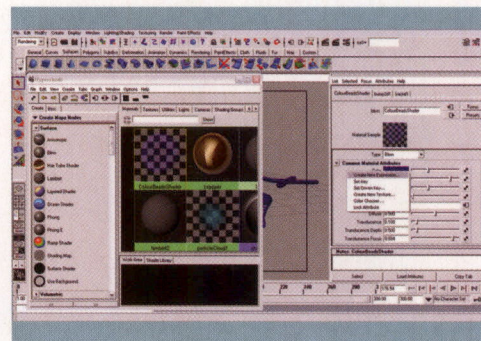
Using Auto Lock modes to help you lip-synch better

When you select Auto Lock for a specific word, the surrounding words are temporarily locked. This allows you to freely move your selected word. A small blue padlock icon appears to remind you that Auto Lock is engaged.

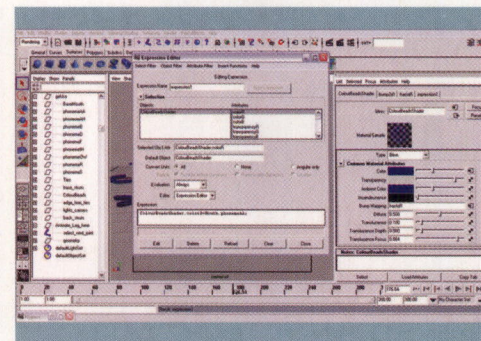
Auto Lock Left locks words to the left of the word you're currently aligning, allowing you to freely move words to the right of the current word. You may find that you prefer to work exclusively in this mode. Try using both and see which one works best for you.



**14** Let's change the colour of the beads on the model's head. In *Maya*, make sure you have the Outliner selected. Select Menu > Window > Rendering Editors > Hypershade and bring up the Hypershade dialog. Create a new Blinn. Select ColourBeads from the Outliner and move back to Hypershade window. Right-click on the new Blinn. Assign the pre-built 'ColourBeadsShader' material to it.

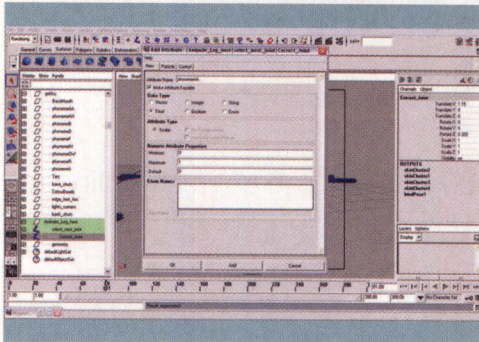


**15** Ensure ColourBeads is selected. Press [Ctrl]+[A] to bring up Attribute Editor. Where it prompts colour, right-click and select Create New Expression. In the Attributes, colour is automatically selected, so we need to change this. Scroll up and select colorR. Copy from Selected Obj & Attr to the Expression Panel and type: = Mouth.phonemeAA. Click Create.

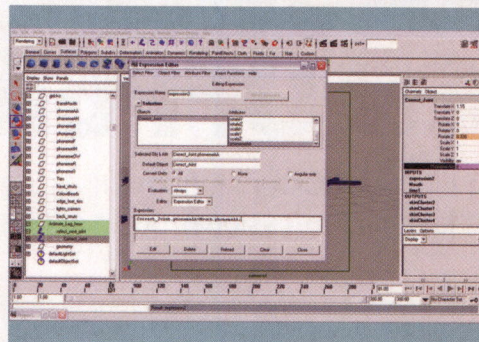


**16** What you've done is tied the phoneme data to the colour of the Blinn, but only its red component. You could use a blend colour utility. This means that you could transition from one colour to another, and you could use the Blender attribute to be driven by the phoneme data. When you click Play, you'll see the colour of the beads changing when the AA phoneme is spoken by our Gekko.



STAGE FIVE | Using *LipSync Master* phoneme curves to animate bones

**17** Now let's animate the Gekko's foot using our *LSM* phoneme curves. Select the joint. On the Channel Box, right-click Add Attribute and call it phonemeAA. Enter Minimum as 0, Maximum as 1, Default as 0. On the Channel Box, right-click on phonemeAA. Choose Set Driven Key. Load Selected as Driver. Then select phonemeAA in the Driver window. Select Driven as rotateZ. Click Key.



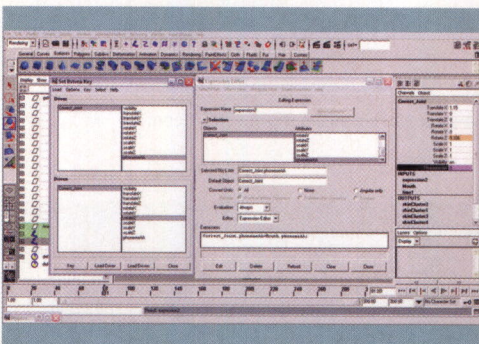
**18** On the Channel Box change phonemeAA to 1. Select the Rotate Tool and rotate the joint in Z as far as you want. Select Set Driven Key window. Click Key again and then close. PhonemeAA in the Channel Box now drives the Z rotation of the joint. Right-click on phonemeAA and choose Expressions. Copy from Selected Obj & Attr to the Expression Panel. Type in = Mouth.phonemeAA. Click Create.

## EXPERT TIP

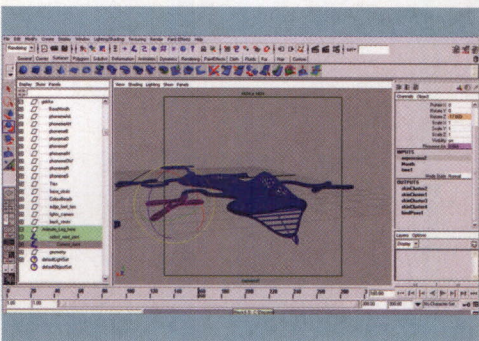
## Adding layers

You can use *LipSync Master* phoneme curves to add more layers of animation to your model. This gives the character true realism and personality. You can go into *Maya's* Graph Editor and make changes at any time, or create expressions with Set Driven Keys.

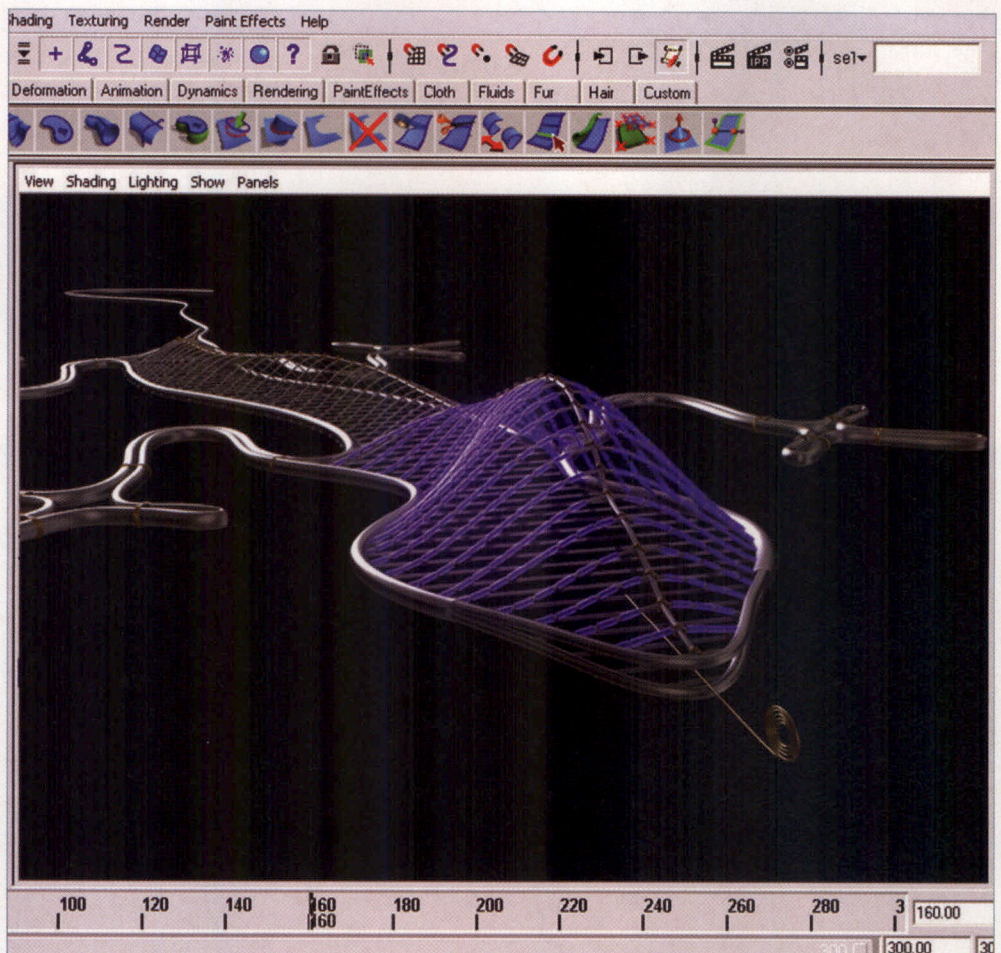
Remember, the phoneme data you generate doesn't have to control mouth shapes alone. You can create different projects for different animations. If you want to make your model raise an eyebrow, just create a separate project in *LipSync Master* for eyebrow animation.



**19** What you've done is tied the phoneme data to a Driven Key via an Expression. This drives the rotation of the bone in the Z axis when that phoneme is spoken by our Gekko. We created the Driven Key to ensure that its parameter range goes from 0 to 1. This perfectly matches *LipSync Master* phoneme data, which also goes from 0 to 1.



**20** When you click Play to see how everything looks so far, you'll see the joint moving. You'll also see geometry deforming, because that's what joints are actually meant to do! You could also put Driven Keys on any of the joints and use the data to control parameters such as translation, scale or rotation in any of the three axes (X, Y, Z).



**21** Lack of disc space prevents us from including the finished animation on the CD this issue, but you can download the movie from the web page on which you registered the software. Remember that the techniques shown here can be applied to absolutely any 'keyable' parameter, not merely morph shapes, joints or colours. You can also use the phoneme curves to drive particles, lattice

deformations, fluids, hair or cloth, and soft bodies, dynamics and rigid bodies. In this tutorial, we used just one phoneme to drive the secondary animation. But since you've exported all nine phonemes, you might as well make use of them. For example, you could tie bones to one phoneme and colour to another. Remember, mouth movements are just a small part of what *LipSync Master* can do for your model! ●





UPGRADE

# EXCLUSIVE LIPSYNC MASTER OFFER!

Install your free copy of LipSync Master LE from this issue's CD and you can upgrade online to any version of LipSync Master - Professional, SoHo or Lite - saving 20% off the normal price

**T**ake your facial animations to the next level with *LipSync Master*, Letterbox Animation Studios' automated tool for lip-synching your characters quickly and accurately. *LipSync Master* can also be used to control the animation of particles, geometry, bones, fluids, cloth and textures. If you can imagine it, you can do it with *LipSync Master*!

On the CD, you can find a copy of the non-commercial edition of the software, *LipSync Master LE*, which comes complete with 14 video tutorials to get you up and running quickly. And after trying it for yourself, why not upgrade to one of the following versions, all of which can be used for commercial purposes, and save 20% off the normal price?

*LipSync Master Lite* (white) comes with a 30,000-word dictionary and includes 'distribute spaces' mode, plus multiple custom and language dictionaries. It will export to *Maya*, or *3ds Max*, or *Softimage XSI*, or *LightWave*, or *Cinema 4D*.

*LipSync Master SoHo* (blue) is for professionals who need more power. On top of the features of *LipSync Master Lite*, it offers 30,000 words, enhanced 13-phoneme export and phoneme length adjustment, plus unlimited speech length and an exposure sheet for 2D work.

*LipSync Master Professional* (red) is for the professional studio. It offers maximum power and quality, including 39-phoneme export, a 130,000-word dictionary, plus 32 custom or language dictionaries. It supports up to 10 speeches per project, with simultaneous editing. Again, an exposure sheet for 2D work is included, along with customisable phoneme mappings, auto peak detection to speed up placement, and many other great tools. And, as you'd expect, *LipSync Master Professional* exports to *Maya*, and *3ds Max*, and *Softimage XSI*, and *LightWave*, and *Cinema 4D*.

Visit [www.LetterboxAnimationStudios.com](http://www.LetterboxAnimationStudios.com) and see which version is right for you - red, white or blue.

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## WHAT TO DO NEXT

To upgrade to *LipSync Master Professional*, *SoHo* or *Lite* and get 20 per cent off the normal retail price, visit [www.LetterboxAnimationStudios.com/3DW](http://www.LetterboxAnimationStudios.com/3DW). This exclusive offer is open to all *3D World* readers.

## OFFER RESTRICTIONS

This upgrade discount cannot be used in conjunction with any other offer. Certain restrictions apply to the free copy of *LipSync Master LE* included on the CD. For more information, please see page 114 or consult the features manual.

## VAT AND SHIPPING

Please note that prices quoted for the download versions of this product do not include shipping.

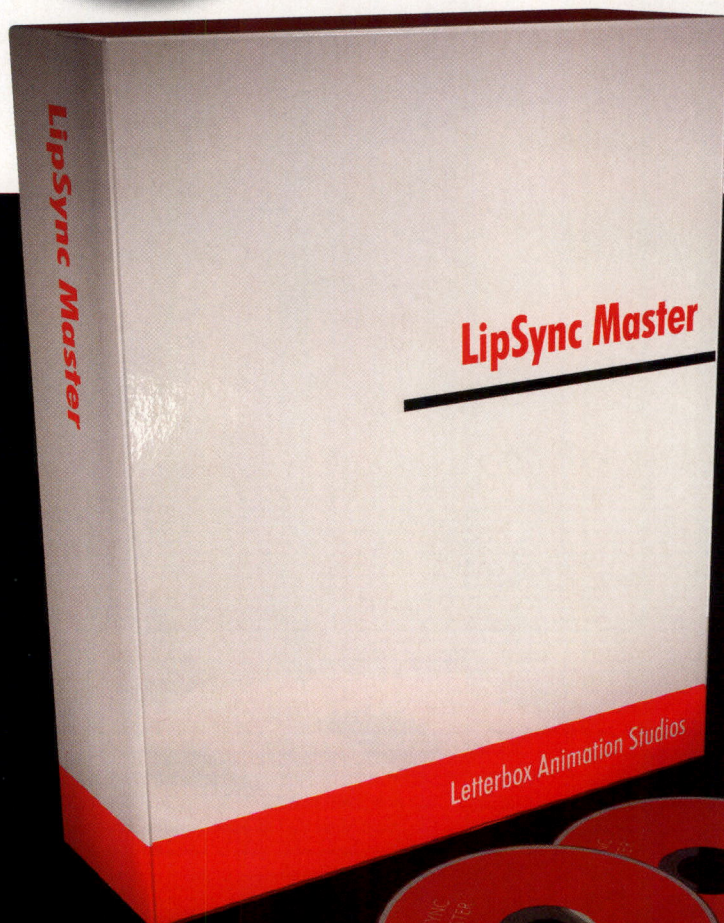
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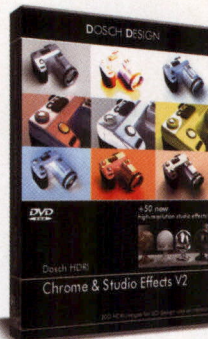
# DOSCH DESIGN



**Dosch Textures:  
Stone & Concrete V3**



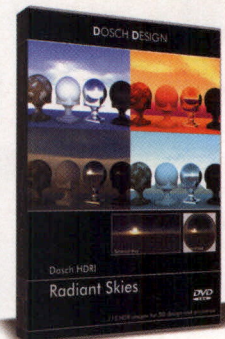
**Dosch 3D:  
Interior Scenes**



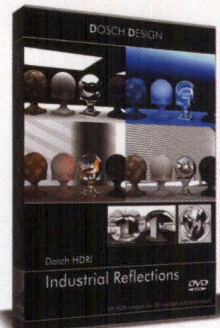
**Dosch HDRI: Chrome  
& Studio Effects V2**



**Dosch Textures:  
Construction Materials V2**



**Dosch HDRI:  
Radiant Skies**



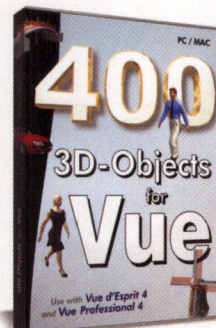
**Dosch HDRI:  
Industrial Reflections**



**Dosch 3D:  
Job Poses**



**Dosch Viz-Images:  
Trees**



**Dosch 3D:  
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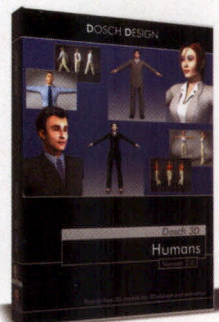


**Dosch 3D:  
Cars 2005**

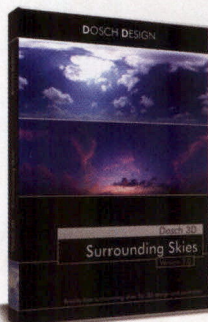
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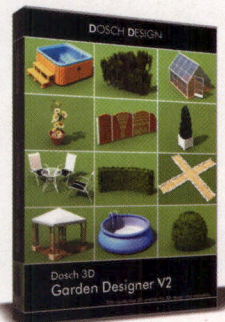
**Dosch 3D:  
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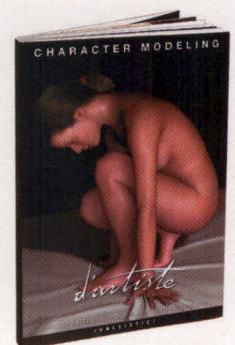
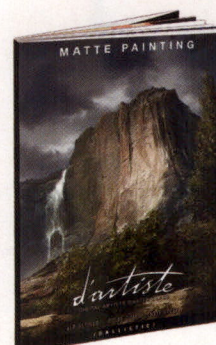
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# Q&A

SOLUTIONS / FIXES / ADVICE

## QUESTION OF THE MONTH

Submitted by John Hardy,  
via email

SOFTIMAGE XSI

# "How can I create a bullet-time animation of a bowling alley?"

This issue's solution is supplied by Ola Madsen of Sweden's Digital Context. He thinks *The Matrix* would have been better with less gunplay and more good ten-pin action...

**T**he basic idea of ten-pin bowling is simple: throw a big, heavy ball down a highly polished wooden floor and keep your fingers crossed that it will knock over at least one of the odd-shaped thingies at the end of the lane. But while the game itself may be straightforward, animating it is not – particularly if you want to freeze time temporarily for a *Matrix*-style 'bullet-time' sequence as the ball strikes the pins, as shown in the movie on the CD.

Even though there are only 11 objects in the scene (the ball and 10 pins), it would still be a rather tedious task animating them all by hand, due to the way they're supposed to interact with each other. Unless you need the pins to follow truly extraordinary trajectories (which can be achieved by additional keyframe animation), XSI's rigid body dynamics (RBD) will be the best option to choose.

Consequently, we'll be facing the recurring question about scale and Softimage units. The truth is that a Softimage unit equals exactly anything you want it to. Whether this is an inch, a centimetre

or a mile is arbitrary, and won't make a difference as long as you know what it's representing in your current environment. However, for the values used in the simulation to make any sense at all, it's important to note that, by default, they're based on the rule that one unit equals 10 centimetres.

## SPEED BALLS

The second part of the solution requires a touch of further manipulation, which will take place in the Animation Mixer. While we could animate the change of time/speed in the movie by hand, as we're simulating the movements of the pins with RBD, this would leave us with a major problem. Decreasing the forces and the speed of the ball could indeed give the desired impression of slow motion, but would also change the way in which the objects interact. For instance, if we reduce the speed of the ball below a certain limit, it won't have enough energy to knock down any of the pins.

Instead, we'll run the simulation at full speed and cache the position and orientation of each object at every frame as a clip in the Animation Mixer. Once this is done, we can easily animate the speed of the clip (a feature known as a 'time warp') and have full control of the camera motion.

## FACTFILE

### FOR

Softimage XSI

### DIFFICULTY

Intermediate

### TIME TAKEN

One hour

### ON THE CD

- Full-size screenshots
- Supporting scene files
- Finished animation

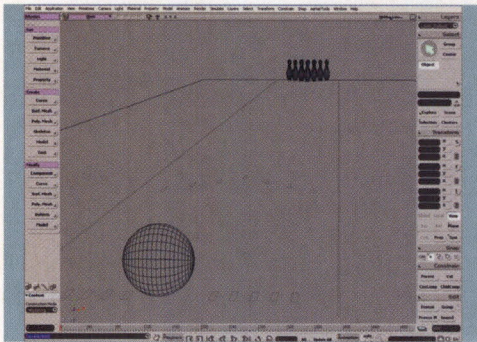
### ALSO REQUIRED

N/A

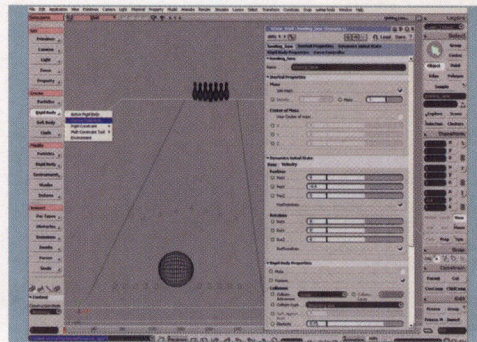




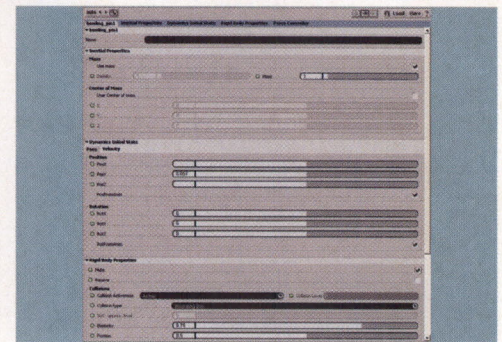
## STAGE ONE | Setting up the alley



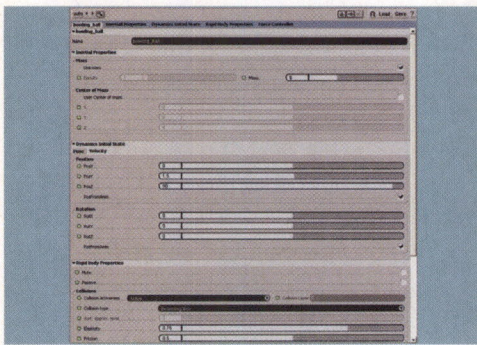
**01** Start by loading the scene file 'bowling\_alley.scn' from the CD. Apart from the refreshments, the scene contains all the necessary ingredients for a successful night of bowling. The first thing we need to do is set up the physical rules, which are going to control the interactions between the scene's components.



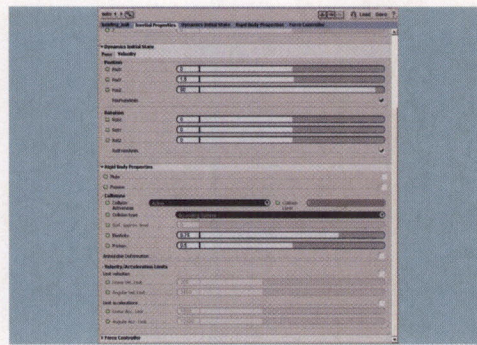
**02** Press [4] to switch to the Simulate toolbar. The bowling lane itself shouldn't be affected by the dynamics in the scene (such as the Gravity), so for this reason, we'll turn it into a passive rigid body. This is done by selecting the Lane object and choosing Passive Rigid Body from the Create > Rigid Body menu. Leave the default settings as they are and close the PPG.



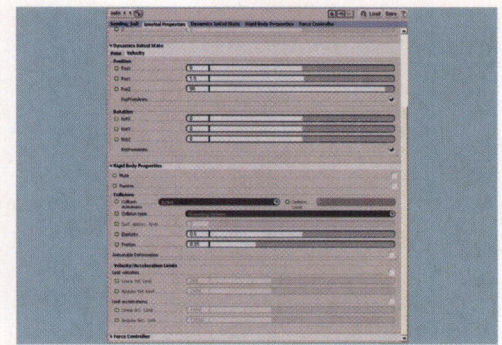
**03** Both the ball and the pins should act and react with each other. Select all of them (11 objects in total) and, from the Create > Rigid Body menu, choose Active Rigid Body. We'll be working on the settings separately, so to ensure optimal interaction, check the Mute checkbox to temporarily exclude them from the simulation. Close the PPG.



**04** Select the ball on its own. From the Modify > Rigid Body menu, click Edit Rigid Body to open its PPG. Bowling regulations prohibit balls from weighing more than 7.26kg, and having a circumference greater than 68.6cm. Under the Inertial Properties, enter 6 as the Mass and we'll stay well under the limit. You can always return and change any of these values later on to fine-tune or experiment with the outcome.

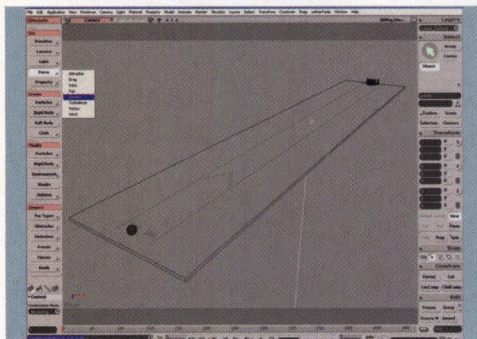


**05** Scroll down to the Rigid Body Properties and uncheck the Mute checkbox. By default, the collision type is set to Bounding Box, which won't produce very realistic results for our ball. Change the type to Bounding Sphere instead. In the next step, we'll set how and when the ball will start losing its energy.

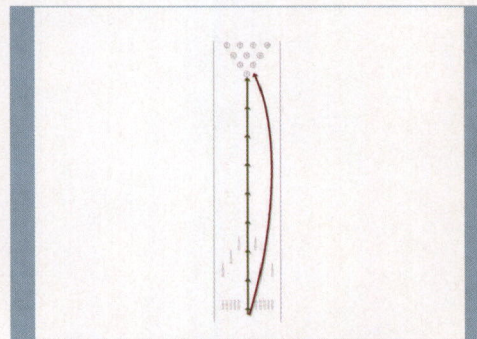


**06** The Elasticity determines how much of the energy will be lost or gained when the ball collides with another object, while the Friction determines how much will be lost as it rolls along the surface of the lane. Set the Elasticity to about 0.5 and the Friction to 0.25. These parameter values are obviously affected by those assigned to the other objects in the simulation, so you may wish to return and fine-tune them later on.

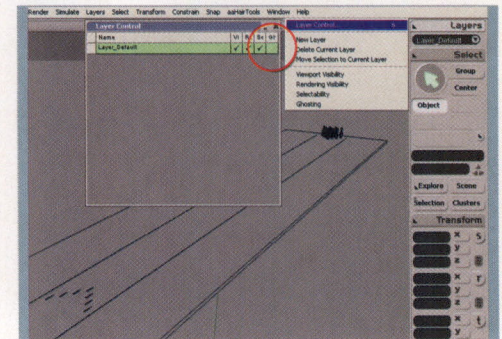
## STAGE TWO | Preparing the hook



**07** Before we start working with motions, we'll need to add Gravity. Any force added to the scene is automatically assigned to all RBD objects in the environment. From the Get > Force menu, click Gravity. As we've constructed our objects in the 'correct' scale (see the introductory text), we can just leave the Amplitude settings as they are.



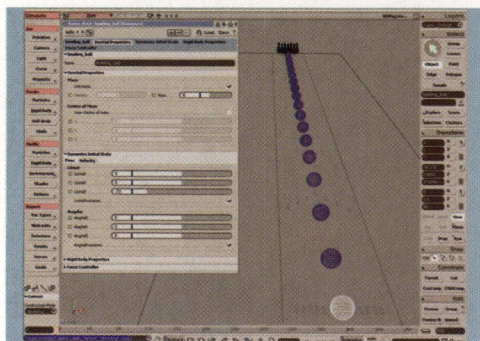
**08** Due to the layout of the pins, it's impossible to knock all of them down with the ball alone - you have to rely on the pins hitting each other. Most inexperienced bowlers throw the ball in a straight line, aiming directly at the first pin, whereas the more experienced player will have usually developed a 'hook' or curved trajectory, as shown above.



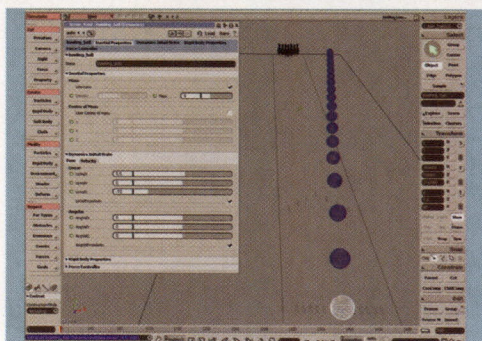
**09** A useful feature in XSI is the ability to use Ghosting, which is available even when working with RBD simulations. Press [6] to open the Layer Control Window and click the empty checkbox at the far right to activate Ghosting for all objects in the layer. This enables us to see the position of the ball throughout its animation without actually running the simulation.



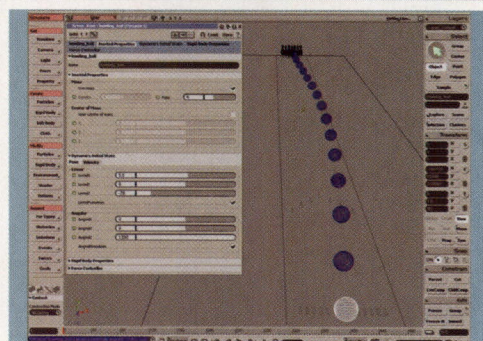
## STAGE TWO (continued) | Preparing the hook



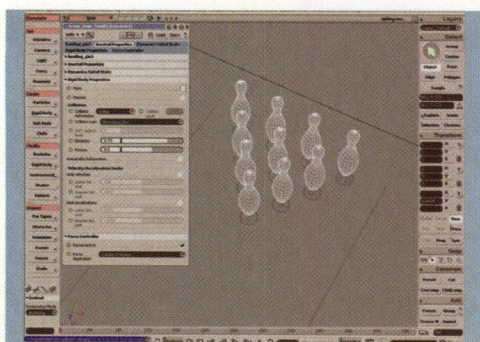
**10** Return to the Dynamics PPG of the ball. Under the Dynamics Initial State, switch to the Velocity tab. Since there's currently no animation assigned to the ball, we need to provide some initial energy. Enter -70 as the LinVelX. With some quick mental calculation, you'll see that a value of 70 means the ball will travel just over 25km per hour, as 70 units equals 7 metres (a second) times 3,600 seconds.



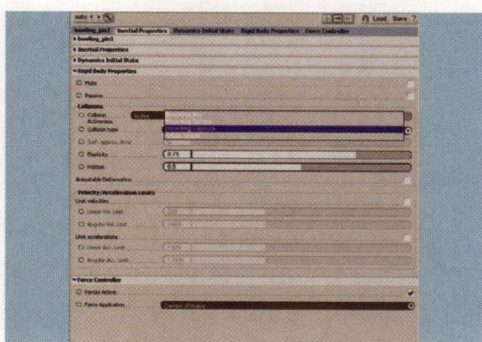
**11** To achieve the curved path we're striving for, we'll also need to throw the ball at a slight angle, rather than straight down the lane. Set the LinVelX to about 5.5. Now the ball obviously runs way out of bounds. To fix this, we'll need to make it spin, thereby forcing it back towards the pins as it travels down the lane.



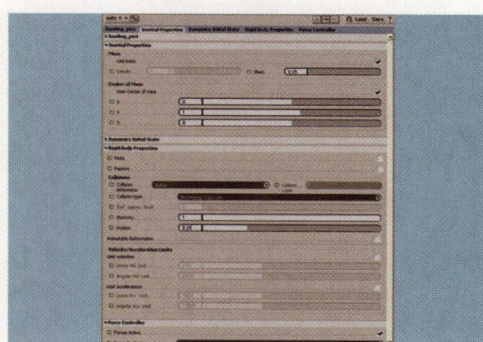
**12** The amount of spin required depends on the values assigned to LinVelX and LinVelZ. The plan is to make the ball hit the pins between pins one and three, assuming that you're aiming for a strike. Under the Angular settings, enter about 1350 as the AngVelZ value, which should do the job nicely. Play with the setting until you're happy with the shape of the path.



**13** Before you start working with the parameters for the pins, you should turn off the Ghosting because this can slow down the system considerably. Select all 10 pins and, from the Modify > Rigid Body menu, click Edit Rigid Body. They are still excluded from the simulation, so start by unchecking the Mute checkbox under the Rigid Body Properties.

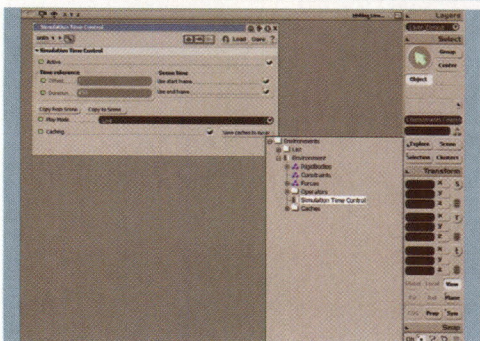


**14** The Bounding Box collision type won't work very well once the pins fall over, so let's change its Bounding Capsule. Although there's an Actual Shape available as the collision type, you'll run a great risk of getting an unpredictable result, and even stability issues, when using it (in XSI version 4.2). As such, unless it's truly needed, we would recommend that you don't use it.

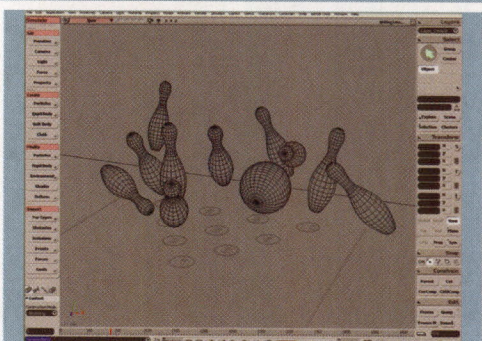


**15** A high Elasticity value, such as 1 (above 1 will add energy at each collision) will give you lots of bouncing, whereas a low value will bring the pins to rest quickly. Set the Elasticity to 1 and the Friction to 0.25. To add more character to the motion of the pins, set the Mass (under Inertial Properties) to about 0.25, click the Use Centre of Mass checkbox and set Y to about 1.

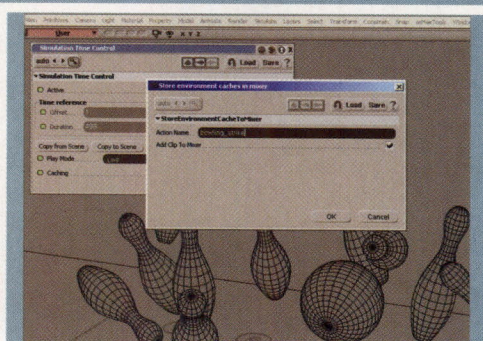
## STAGE THREE | Caching the simulation



**16** In order for us to be able to edit the result of our simulation, we need to store the information about where and when the objects are in space and time. In the Main Command area, click the Explore button and choose Environments. Expand the Environment section and click the Simulation Time control. Check the Caching checkbox at the bottom of the PPG.



**17** While all the action is played out in about four seconds (100 frames), we still want to run the simulation for another 15 seconds or so. The reason for this is to ensure that we'll have enough animation in our clip to allow easy editing. At frame one, hit the Play button and let the simulation run all the way to the last frame (500).

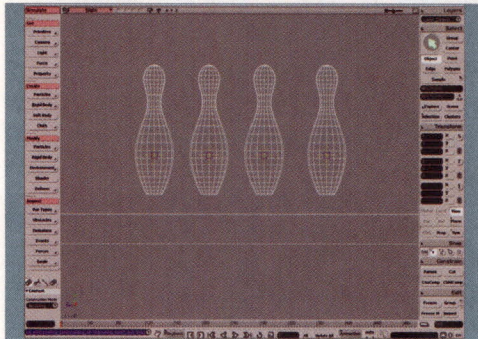


**18** Return to the Simulation Time Control PPG and click the Save Caches to Mixer button. This will open a new PPG. Enter a suitable name for the clip and click the Add Clip To Mixer checkbox to load it into the Animation Mixer. Now click OK. Note that this will automatically deactivate the simulation and the motions will now be driven by the animation clip instead.

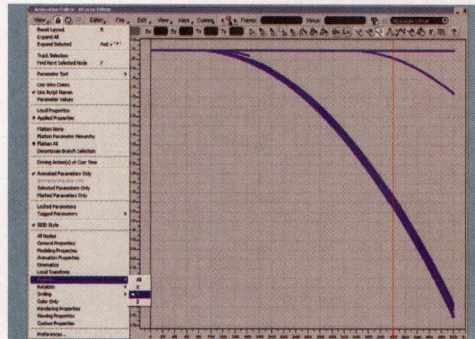




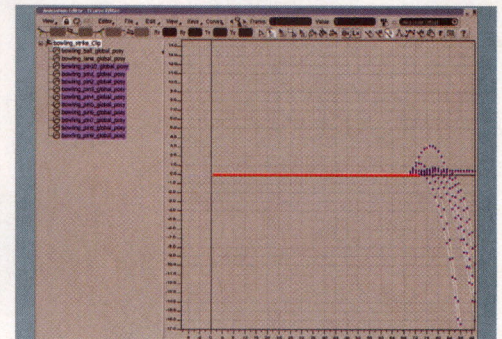
## STAGE FOUR | Editing the animation clip



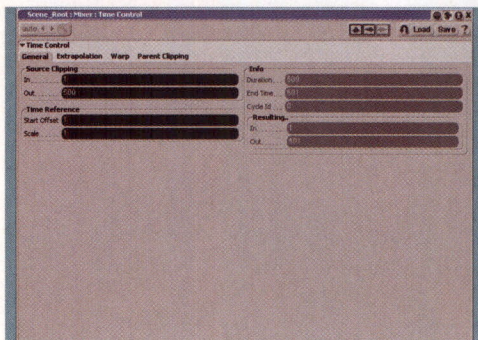
**19** While the Bounding Capsule is working nicely with the pins, there is a slight problem. As the ends of the capsules are round and not flat, the pins appear to be floating in the air at the beginning of the simulation. Don't worry about this - since we've converted their positions to F-curves, we'll be able to fix this slight slip-up in the next two steps.



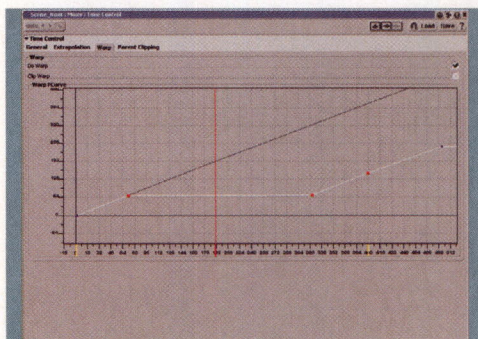
**20** Select any of the objects and press [Alt]+[0] (zero) to open the Animation Mixer. With the right mouse button, click on the simulation clip and choose Animation Editor (AE) from the menu. In the AE, click the View menu and choose Position > Y to filter out any animation (apart from what's on the object's Y-axis). In the Animation Tree, select all of the pin objects.



**21** Zoom in really close on the frames between 1 and something like 60. Looking at the keys, you'll see that they have a value just over 0.4, whereas the bowling lane is at 0. Select all the corresponding keys for the pins, enter 0 in the Value text box and press [Enter]. It's a good idea to work with one pin at a time, as it's easier to see the different keys. Close the AE and you're back on track.



**22** Select any of the objects and press [Alt]+[0] to open the Animation Mixer. Select the F-curve and use the right mouse button to click on the simulation clip. From the menu, choose Time Properties (or press [Ctrl]+[T]). In the General tab of the Time Control PPG, you have the option to scale the duration (speed) of the entire clip by changing the Scale value under the Time Reference.



**23** Since we're going to animate the change of speed, we'll need to switch to the Warp tab. Start by clicking the Do Warp checkbox to enable the effect, right-click inside the Warp F-curve area and choose Keys > Unlock All Keys from the menu. Step through the animation until you reach the frame where you want the time warp to begin. This will probably be somewhere around frame 71.



**24** Right-click within the graph again and choose Keys > Insert Key at Current Time. Next, go to frame 73 (this is the frame where you want the animation to return to normal speed) and insert another key. Set another key at frame 150. Now select the keys at frames 73 and 150 and move them about 250 frames to the right. (To avoid accidentally changing the Y values of

the keys, you can right-click and choose Keys > Lock In Y (Value).) This will stretch the animation between the keys on frames 71 and 73 for another 10 seconds, but leaves the speed between the keys on frames 73 and 150 unchanged. Your graph should now look something like the line in the previous screenshot. And that's it. Your freeze-frame effect now should be complete. ●



# Q&A

Our experts  
this month...

## 3DS MAX

**Pete Draper** is the Visual Effects Director at Lightwax in Bristol, and his wings are like a shield of steel...

[www.xenomorph.co.uk](http://www.xenomorph.co.uk)

## BLENDER

**Bassam Kurdali** is Animation Director on Project Orange, the Blender Foundation's upcoming 'open-source movie'

[www.slikdigit.com](http://www.slikdigit.com)

## CARRARA PRO 4

**Mike de la Flor** is a medical illustrator, instructor and writer. He also teaches computer graphics at Kingwood College

[www.delafior.com](http://www.delafior.com)

## CINEMA 4D

**Adam Watkins** is the director of Computer Graphic Arts at the University of the Incarnate Word in San Antonio, Texas

[www.cgaiw.com](http://www.cgaiw.com)

## LIGHTWAVE 3D

**Ben Smith** is Creative Director at Red Star Studio. His heart goes boom boody boom boody boom boody boom boody boom...

[www.redstarstudio.co.uk](http://www.redstarstudio.co.uk)

## MODO

**Dan Ablan** is President of AGA Digital Studios. He's also the founder of 3D Garage.com and is currently working on his ninth book

[www.3dgarage.com](http://www.3dgarage.com)

## MAYA

**Gary Noden** still works at 422 Manchester, but has decided that with his love for silk, he could become a draper (sorry Petel)

[www.422manchester.com](http://www.422manchester.com)

## PHOTOSHOP

**Leigh van der Byl** is a 3D artist who works for CafeFX. Her recent credits include the blockbusters *Sin City* and *Fantastic Four*

<http://leigh.cgcommunity.com>

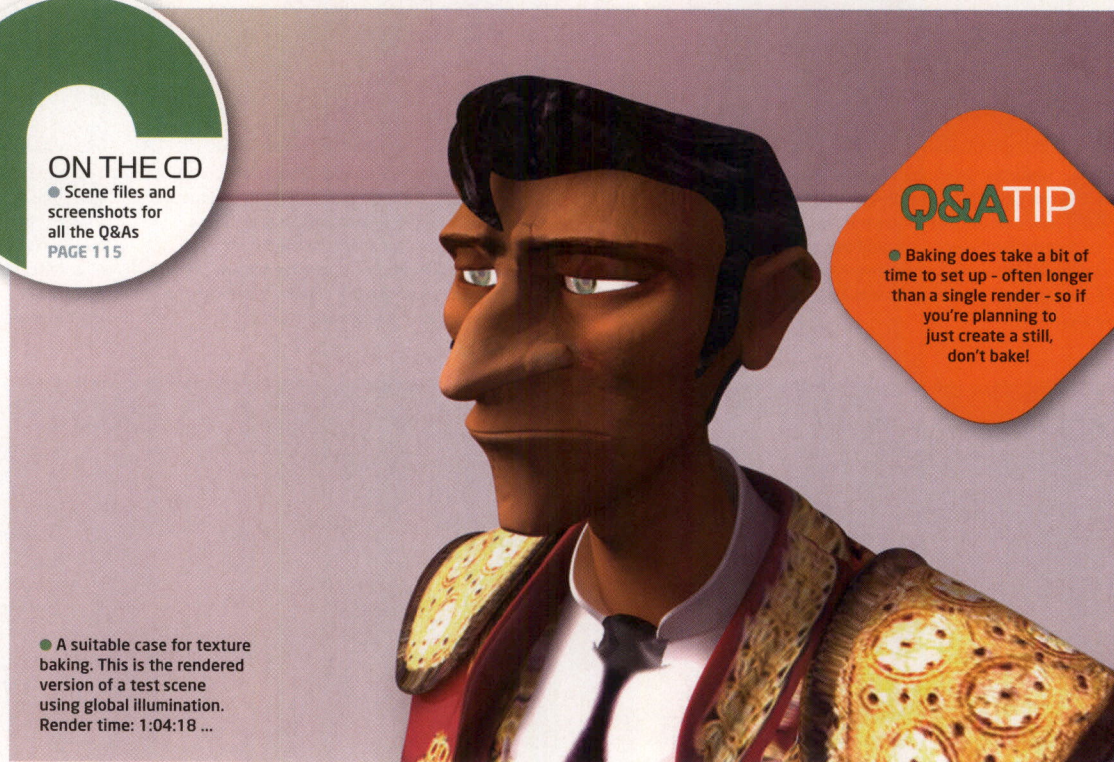
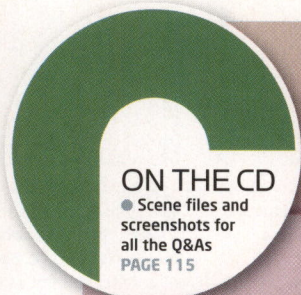
## POSER

**Ian and Dominic Higgins** run Pixel Revolution Films, a low-budget film production company based in the UK

[www.soupstudio.com](http://www.soupstudio.com)

# Quick Questions

No matter which 3D software package you use, our experts are here to help. Send us your query and we'll provide the solution: [3dw.qanda@futurenet.co.uk](mailto:3dw.qanda@futurenet.co.uk)



## Q&A TIP

● Baking does take a bit of time to set up - often longer than a single render - so if you're planning to just create a still, don't bake!

● A suitable case for texture baking. This is the rendered version of a test scene using global illumination. Render time: 1:04:18 ...

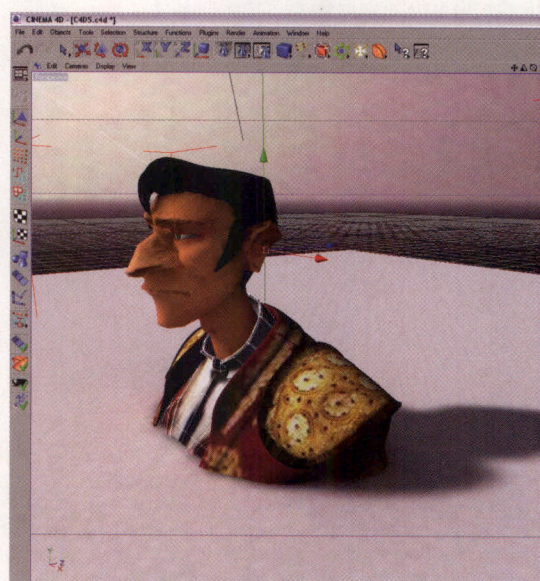
## CINEMA 4D 9.5 | Baking textures

**Q** Much is being made of the ability to bake textures in the new *C4D 9.5*. What exactly is this? **JAMES, VIA EMAIL**

**A** Rendering - it's exciting, it's maddening. It brings your 3D work to life and seems like it will be the death of you. We've heard the promises of faster processors making rendering times shorter, and to a certain extent this is true. However, as processing power has increased, so have the demands that software places upon it. The pain of sitting around waiting for a render to finish has never really gone away.

One solution is texture baking. This functionality has been around in *C4D* for a while, but its new incarnation is much more powerful. The process involves taking a render of a scene and saving the shadows and lighting effects that rendering generates as a new texture which is then reapplied to the objects within the scene. This means that you end up with surfaces that appear to be rendered but are, in fact, completely independent of light (they have a built-in Luminance channel). Thus, when it's time to render further frames, output is much faster. A complex radiosity-based scene can render in seconds rather than hours. You can also see how the shadows work in your view within the editor.

Although the functionality is extensive, you can make quick use of it by selecting an object and adding a Bake Texture tag to it (Render > Bake Texture). With this, you can define what texture characteristics are to be baked. Next, simply select the objects and then choose Render > Bake Object. *C4D* will then create new materials, duplicate your original objects and apply the new texture. Your editor will display the model as a rendered scene, but it will be completely interactive. **[AW]**

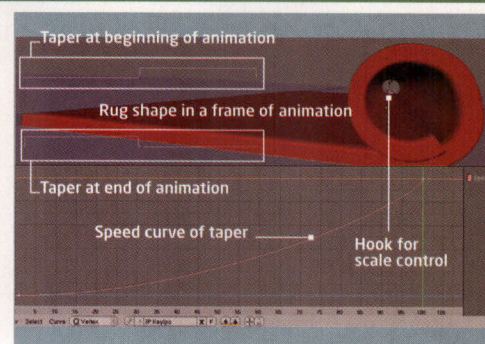
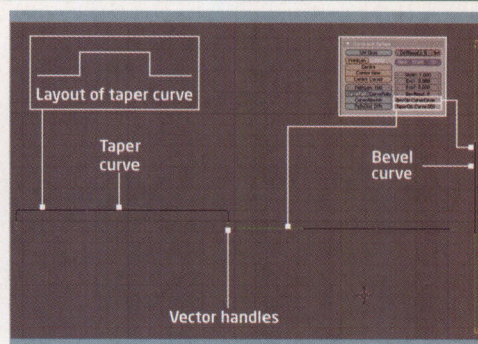
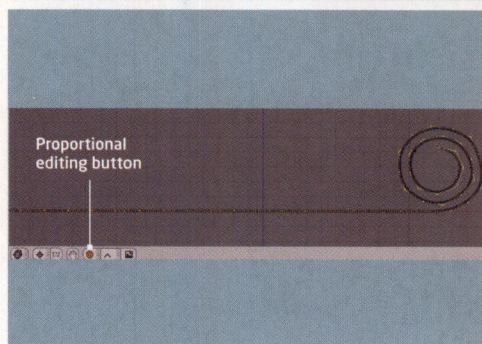


● ... and here's a baked version of the same scene. Rendering time per frame: 12 seconds. What's more, it's viewable from any angle



## BLENDER | How do I animate a carpet unrolling?

FROM THE FORUMS



**01 Model the carpet curve**  
You need to model both the rolled and unrolled portions of the carpet as one curve. Start with a path, subdivide it a few times, then rotate an endpoint with Proportional Editing turned on, scaling the inner point of the spiral up to get a tighter spiral. Extrude the unrolled section. For an even animation, tweak the points so they're spaced out evenly along the curve: the method used here (Animated Taper) is based on the points of the curve, not its overall length.

**02 Add bevel and taper curves**  
Add a curve circle (Bezier is easiest) and use vector handles (select all points and hit [V]) to shape it into a flat rectangular cross-section for the carpet. Type the name of this curve in the BevOb button for the rug curve. Now you need to add a Bezier curve that animates the displayed section by scaling a subsection of it down to zero. Again, use vector handles and shape the curve into the step shape shown above. Make sure both ends include a control point at zero.

**03 Animate the carpet**  
You need two curve vertex keys on the taper curve. Slide the stepped portion of the curve to one end, hit [I], then do the same at the other end. To control speed and direction, edit the vertex IPO for the taper curve. The rug now unrolls but moves at the same time, so shift it horizontally at the start and end of the animation so it appears static. You may need additional keys in the middle. For more refinements, see the scene file on the CD. [BK]

## 3DS MAX | Particle-based impact effects

**Q** I've got to animate a scene with a lot of gunfire directed at a spaceship - too much to manually keyframe hits on its deflector shield. Is there any way for me to do this automatically? **BEN HALL, VIA EMAIL**

**A** A few years ago, this would have been a painstaking operation, manually positioning and keyframing off gradients when particles or geometry intersected with the shield geometry you had set up in the scene. However, with Particle Flow, you can key all of this off automatically - and even take the effect further by having the shields fail after a given period of time, or once they have taken a certain number of hits. It's all just a matter of setting up the correct events.

The shield, for this example, is a large sphere that has been scaled down a little in the Z-axis. It should create an impact mark that fades over time (controlled by a Particle Age map) and a Fresnel perpendicular bubble effect around the impact site (created by a Falloff map and nested gradients). To control the impact region generation, you need to use a Shape Mark operator which, when set to Box Intersection, cuts a chunk out of the reference geometry and planar maps the result. Using a combination of Falloff (for the perpendicular effect), radial Gradient Ramps (one to control the impact mark and another to control the strength of the falloff so there isn't any clipping at the edges of the cut-out geometry) and Particle Age maps, you can get the resulting particle geometry to fade over a few frames after the initial impact.

The trick here is the Shape Mark's Box Intersection parameters. While you don't want a shape so small that the effect is not really noticeable, you don't want it to be too big either - otherwise, due to the way the Booleaned geometry is mapped, you will have a gradient applied to the opposite side of the shield. You will also need to introduce a few other effects, such as a single dwelling particle to generate a glow effect at the point of impact, plus other debris, spark effects and - if you're any good at scripting - lighting to illuminate the hull.

The screenshot on the bottom right shows the basic set-up, with the teapot object standing in for the spaceship. Before rendering, this was replaced with the UFO model, relinked, and the shield template was scaled to fit accordingly. For more details, consult the supporting files on the CD. [PD]

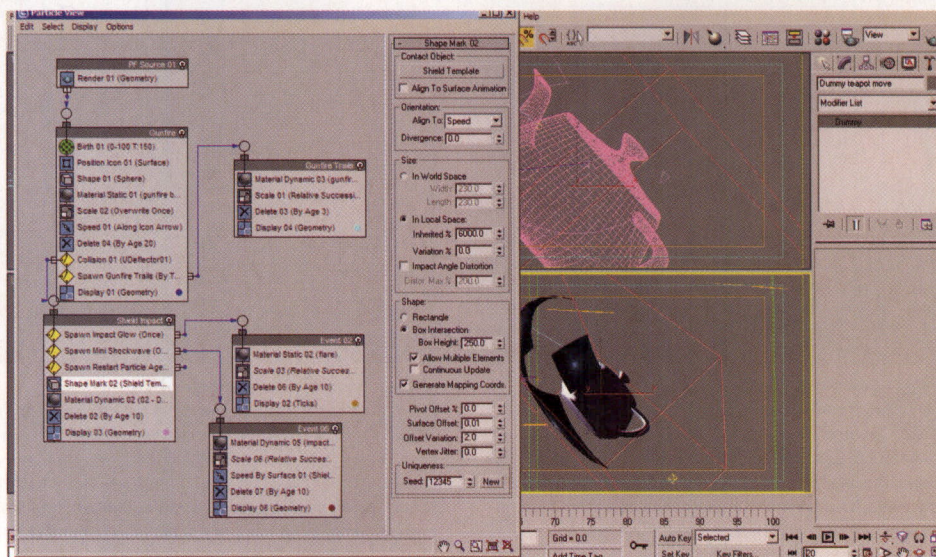
● Right: the finished effect, rendered out via Video Post, with additional glow elements added ...



## Q&amp;A TIP

● Instead of working with a bubble for the shields, try using a low-polygon version of the spaceship hull with all polygons detached for a *Dune*-style shield effect

● ... and the system that drives it, with the teapot object standing in for the UFO. For more details, see the supporting files on the CD





## PHOTOSHOP | Using adjustment layers

**Q** How can I most efficiently alter colours and tones of layers or parts of layers when creating texture maps?  
**ANDERS HASSELQUIST, VIA EMAIL**

**A** One of the most overlooked features of *Photoshop*, adjustment layers enable you to create layers that act in the same way as the conventional Image > Adjust tools, but offer more flexibility. You can create an adjustment layer by clicking on the small circular halftone icon at the bottom of the Layers palette. The resulting adjustment layer can be dragged and repositioned in the Layers list just like any other layer, and affects all layers beneath it.

When initially creating a new adjustment layer, the actual adjustment's dialog pops up, so you can enter the necessary settings. If you wish to alter these at a later stage, double-click

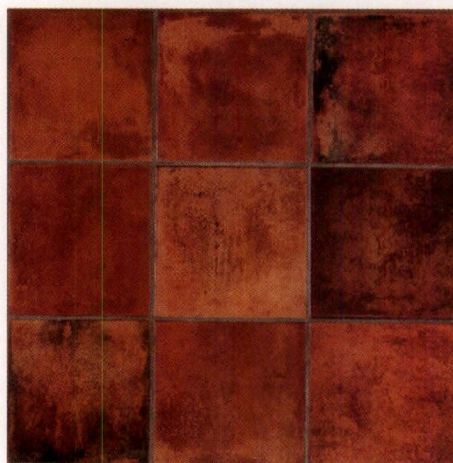
## ADJUSTMENT LAYERS ALLOW FOR EASIER CHANGES AND UNDOS

on the layer's icon in the Layers palette. As the adjustment layer isn't permanently altering the pixels in the underlying layers, this is the most nondestructive way to alter tones.

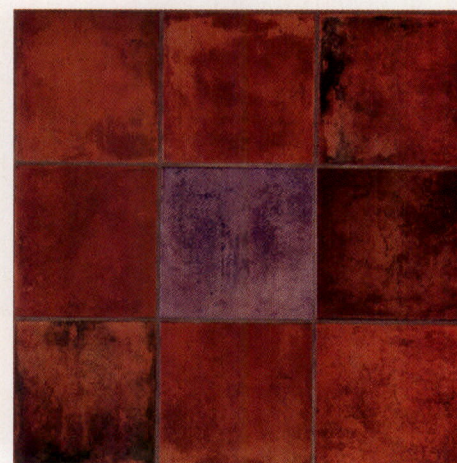
Adjustment layers also have some flexibility as regards which parts of the underlying layers they affect, thanks to the use of layer masks. A layer mask is automatically created along with the layer, and by clicking on its icon in the Layers palette (the icon next to the actual layer's icon), you can create a mask that will determine the region of the image that the layer affects.

Creating black areas in a layer mask excludes those areas from the effect of the adjustment, in much the same way as an alpha channel would. You can create these areas in the mask with any of your painting and fill tools.

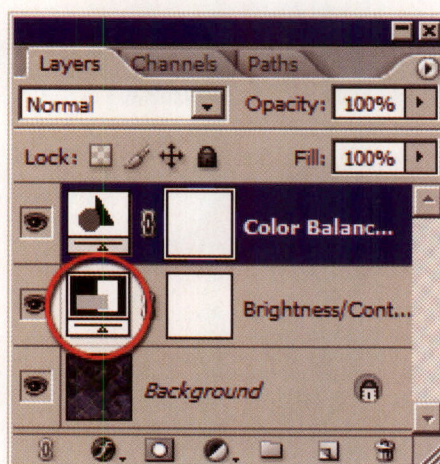
Adjustment layers are particularly useful for changes that you want to try on an image but aren't 100 per cent sure of. Since they don't actually alter the image layers themselves, they make for easier changing and undoing. This can save you a lot of headaches when trying to undo changes that you decided against at a later stage in the process. **[LVDB]**



● A simple image of a tiled floor before masks and layers are applied. All of these images are included on the CD



● The middle tile has been isolated with a layer mask, which means that the adjustment layer only affects that area



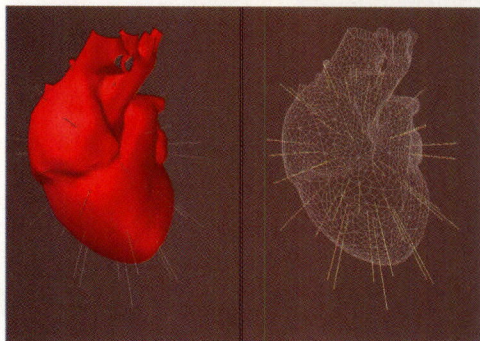
## Q&amp;ATIP

● Rather than just painting in black and white, you can use shades of grey in your layer mask to vary the degree to which the adjustment layer affects the image

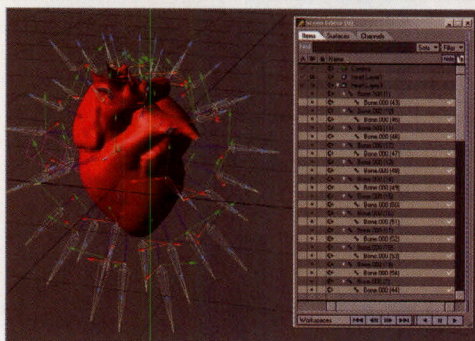
● Double-clicking on a layer icon will bring up its adjustment's dialog box, so you can make changes at any time

## LIGHTWAVE 3D | How can I make a heart beat?

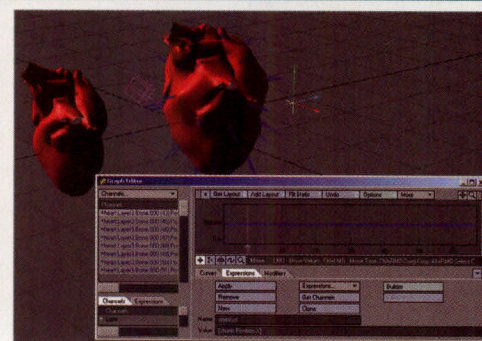
JEZ CAPLAN, VIA EMAIL



**01 Prepare the heart**  
 In Modeler, create a sphere around the heart in another layer. Press [K] to kill the polygons, convert the points to polygons and extrude to make two-point polys. Move and scale the extruded points to create the lines of a lattice-like structure that surrounds the heart. The scale of the lines will determine how the heart will expand.



**02 Add bones to your organ**  
 Convert the two-point polys to Skelegons and, in Layout, convert these into bones. Select them all, press [Ctrl]+[R] to unrest them and then cycle through each one using the [=] key to create a child bone. Add a Null called Shrink and, in the Graph editor's Expression tab, create a new expression called Shrinker that reads [shrink.Position.X].

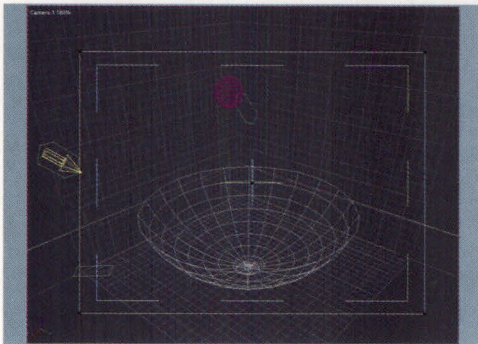


**03 Get it beating**  
 Select all the child bones and bring their curves into the Graph editor. Filter out everything but the Position.Z channels and apply the Shrinker expression to them. Set the heart to use bones from the lattice later, rest all the child bones with the [R] key and slide the Shrink null in X so they slide in and out, causing the heart to beat. **[BS]**

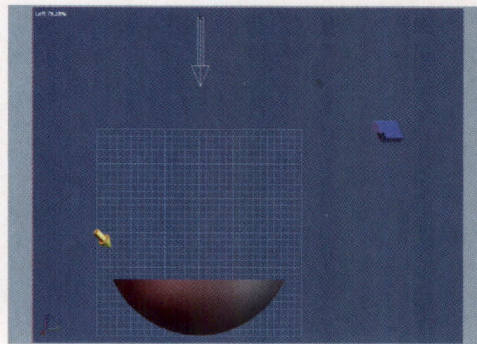


## CARRARA PRO | How do I animate a rolling marble using physics?

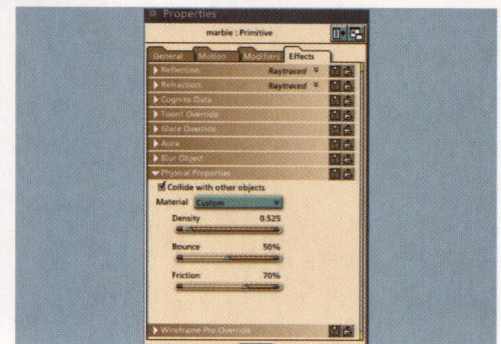
TED PARRECO, VIA THE FORUMS



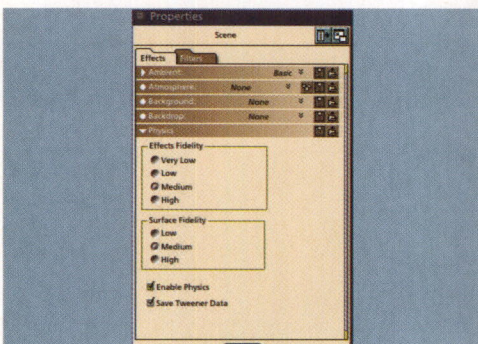
**01 Open the models**  
Open the file physics-start.car found on the CD. To cut down on calculation times as we work out the simulation, the scene contains low-poly proxies of the table, bowl and marble. It's best to use vertex models instead of spline models, because the polygon count is easier to control in vertex models.



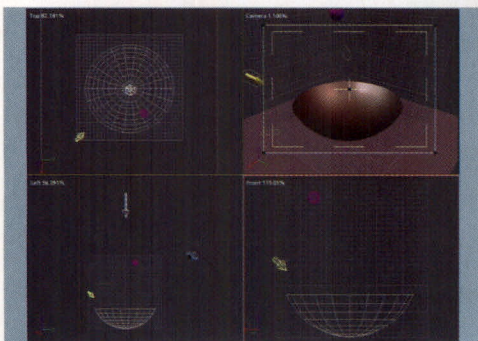
**02 Add gravity**  
The rigid body physics engine has five different force simulations, but we'll just use Directional to simulate gravity. Click on the Physics button, select Directional force and click in the scene. Rotate the Directional force so it points down and position it above the scene. In the Effects tab of the Properties tray, set its Strength to 50.



**03 Add physics to the marble**  
Physics calculations are time intensive, so only the marble will have them enabled. Select the marble, and in the Motion tab of the Properties tray, select Physics. Now click on the Effects tab, locate Physical Properties and check Collide With Other Objects. Set Density to 0.5, Bounce to 50%, and Friction to 70%.



**04 Render and play the animation**  
Click anywhere in the scene or on the Scene object in the Properties tray and locate the Physics section in the Effects tab. Check Enable Physics and Save Tweener Data. Save Tweener Data saves the physics calculations so they aren't repeated each time the animation is previewed. Set the Render Range to at least 20 seconds and click on the Play button in the Timeline. After a few moments, Carrara calculates the physics and plays the animation.



**05 Tweak your animation**  
You may want to adjust the marble, the Directional force or both. If you want the marble to have less energy, place it closer to the bowl. If you want it to appear tossed, change the angle of the Directional force. While making adjustments, turn off Enable Physics, otherwise Carrara will perform its calculations for every change.



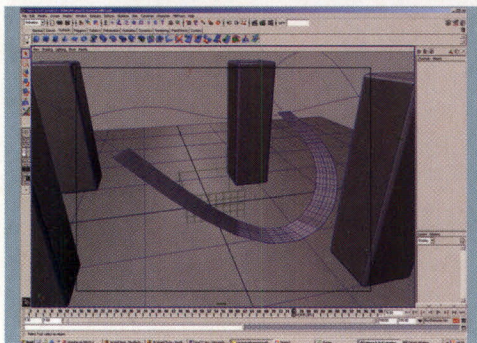
**06 Going further**  
When the simulation is complete, you can replace the low-poly proxies with higher-resolution models or applying subdivision surfaces. Carrara will apply all simulation data to the new models without recalculating the physics. Jump into the Render room and render the animation,

turning on Motion Blur to add a bit of realism. In this tutorial, we only animated the marble but, in most cases, the physics simulation is part of a larger animation. To save time, select the objects with physics as the motion method and convert them back to Explicit motion. Carrara will convert the data to keyframes. Save the physics data in a separate file in case you want to change it later. [MDLF]

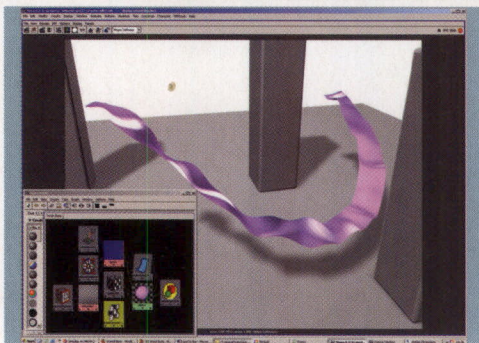


## MAYA | How do I animate a long silk ribbon?

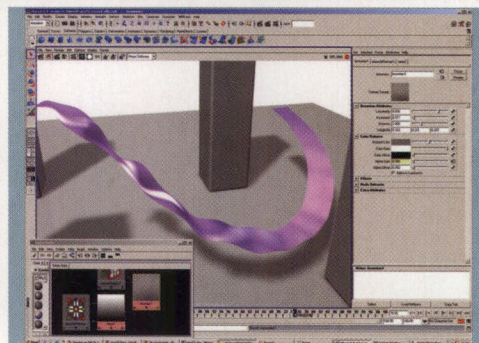
GLENN DAWICK, VIA THE FORUMS



**01 Use NURBS**  
Silk is so light, it tends to float in the air as if defying gravity. If you don't have *Maya Unlimited's* Cloth or Dynamic Curves, the best way to achieve a similar effect is to use a displacement map. Create a NURBS surface to represent a silk object, increase its U and V patches and then attach it to an animation curve. Now add a Flow Path lattice to the surface.



**02 Add shaders and displacement**  
Assign a Blinn shader to your silk object. Connect a Ramp with two similar colours on it to the Blinn's colour and a samplerInfo node's facingRatio into the ramp's uCoord and vCoord. Now connect a Brownian to the Shading Group's Displacement node. Turn off the Feature Displacement on the silk object, test render and then tweak your values until you have a nice wave in your silk.



**03 Final touches**  
Now you need to dampen the displacement at the front of the silk. Attach a ramp to the Brownian's alphaGain, making it white at the top and black at the bottom, controlling the height over the surface's length. Animate a small upward movement into the Y translation of the Brownian's 3dTexture placement. This adds a tiny bit of dynamism to your render. [GN]

## POSER 6 | Liquid reflection and refraction

**Q** How can I create convincing-looking water for my Poser 6 scenes? **STEVE COUSINS, VIA EMAIL**

**A** For this scene, we're going to create the dramatic image of The Lady of the Lake: a hand and sword rising up out of the water. Assuming you already have your Poser character posed and the camera angle set up, the first step in creating our water plane is to load a simple Square plane (from the Props library) into your scene.

In the Properties window, deselect the Cast Shadows radio box. The square plane is scaled up accordingly and positioned so all you see of your character is the upper arm.

In the Material room, select Add Reflection from the Macros menu. This automatically assigns the properties to the selected prop. Make sure the Background colour is white and set the

## TO MAKE YOUR WATER TRULY CONVINCING, YOU NEED RIPPLES

Reflection value to 0.4. Change the Diffuse colour to black and then add a Refraction node. This will create the effect of reflections being distorted in the water's surface.

Select Add Refract. Change the background colour to a dark grey and set the Reflection value to 0.3. The amount of refraction or distortion is controlled by the Index of Refraction tab. For this scene, we're going to leave it at the default value.

To make your water truly convincing, you need to create ripples, for which you will need to use a Displacement map (you can find the map on the CD). To select the Displacement node, right-click and choose New Node > 2D Textures > Image\_map. Load Ripples.jpg and then set the Displacement to 0.0700. Create a new node from the image map and connect it to the Bump option. Setting it somewhere around 0.015900 to 0.02500 should be fine. Finally, in the Render Options window, make sure you select Final as your render mode.

By following the steps above and experimenting a little, you'll soon find that it's possible to create some dramatic and interesting water effects for use in all your Poser scenes. [I&DH]



● The finished effect, complete with virtual water surface. The result may be subtle, but it makes a huge difference to the success of a composited shot



● The backdrop is a square plane with a photographic sky used as a texture. More dramatic effects, such as wet skin, can be added in post work

## Q&A TIP

● It's worth spending some time in the Material room experimenting with the various settings and nodes to see what effects are possible



## MODO | Setting up axes of influence for tools

**Q** I'm trying to bend an object on a specific axis, but the Bend tool doesn't enable me to change directions. Why is this? **LUIS MEDEROS, VIA EMAIL**

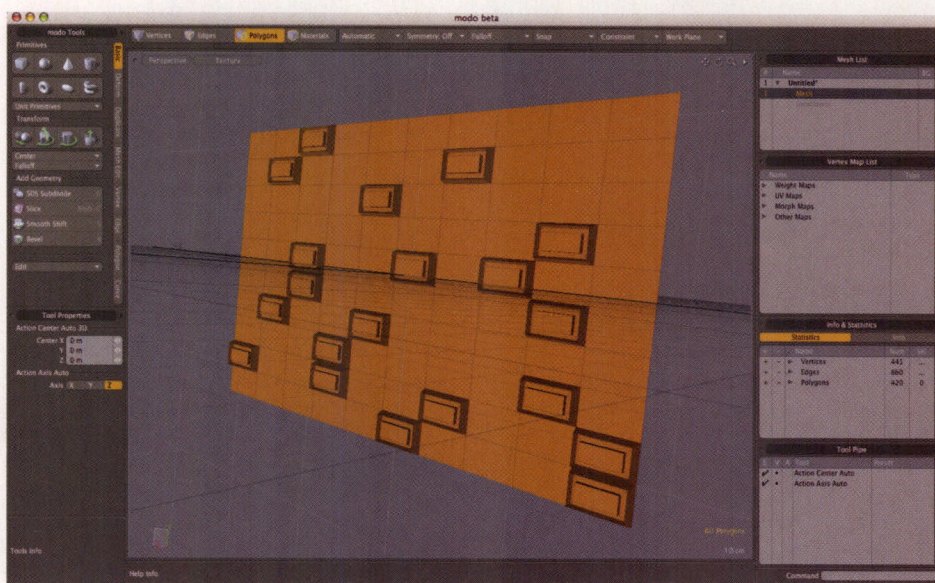
**A** The smart folks over at Luxology once told me to work towards using just a single viewport to model. Traditionally, I modelled in four viewports: Top, Front, Side and a Perspective or Camera view. Movements on the Z-axis meant using the Top or Side views; movements on the X-axis meant using the Top or Front views. Learning to work in just one view was a major challenge, but Luxology has designed *modo* in such a way that you can use one view and work faster than you thought possible. Once you understand the workflow, the proverbial light bulb will turn on.

Figure 1 shows the *modo* interface with a simple segmented plane, and some bevels just to make it interesting. If you select the Bend tool from the Deform category and then click on the object to set the bend direction, the blue handle doesn't enable you to change axis. While you can bend up on the Y-axis, you really want to bend on the Z. Figure 2 shows the Bend tool active, but not working in the way you want it to.

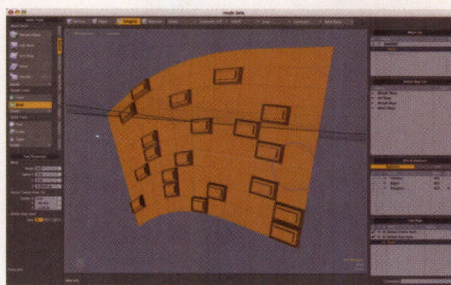
To change the axis, you have two options. One is simply to change the Action Auto Axis for the Bend tool directly from the Tool properties, but this can be cumbersome, as you want work on the fly without too many mouse clicks. The way to get around this is to first press the [Spacebar] to turn off the Bend tool. Now rotate the viewport from the controls at the top right, paying close attention to the axis control icon at the bottom left of the viewport. Rotate the view until the icon's white area draws itself between the Z and the X axes.

This little icon represents every action you perform in *modo*. From building primitives in a certain axis to applying various tools, paying attention to the rotation of your view with this icon is the key to modelling in a single viewport. Figure 3 shows the axis icon in the bottom left of the interface rotated to allow the Bend command to work in the correct axis.

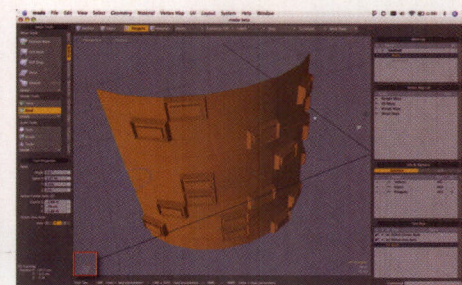
Though this way of working may be unusual, *modo* is very powerful, and the sooner you get used to its workflow and drop the habits you've developed in other 3D applications, the sooner you'll be modelling at the speed of thought. **[DA]**



● Fig 1: A segment plane with some bevels can be bent in a single viewport with great control if you know which tools to use



● Fig 2: The Bend tool has been turned on for the object, though it only seems to be able to bend on a single axis



● Fig 3: By rotating your viewport, you can avoid having to use numeric settings when modelling and applying tools

## CONUNDRUM | Send us your solutions to this month's brainteaser

Each issue, we set you a real-world 3D problem to solve. The sender of the best solution wins the book shown on the right. Our conundrum for last month was posed by XS/user Spencer Bailey, who asked:

**"I'm animating a tie. I need to get it into extreme shapes, but I don't want to have to key lots of bones. Is there an alternative set-up that will give smooth deformations?"**

The solution was supplied by a1m1m25, who wrote: "I would use shape animation for this. Having modelled the tie, you will need to be in Shape Modeling construction mode. Select all points that will be deformed and click on the Cluster button under the Edit rollout. Bring up the cluster's property page by pressing [Enter]. Give it a sensible name; I called mine 'Tie Deform'. Now save a key for this default position. To do this, switch to the Animate panel by pressing [2] on your keyboard, then select Deform > Shape > Store Shape Key. Again give it a sensible name like 'Default Pose'. Now create your first extreme position. I used mainly Proportional modelling for this. Tick 'Tagged Points Only' so that you only affect the cluster and nothing else.

"Make sure the cluster is always selected in the 'Clusters' folder in the Explorer before storing Shape Keys. Once you have formed your first extremity, select Deform > Shape > Store Shape

Key again and give it an appropriate name. In this instance I chose 'Curled'. Before making further shapes, it is important to begin with the original position. To do this, press [Alt]+[0] to open the Animation Mixer and [8] to open an Explorer window. In the Animation Mixer, press [Shift]+[s] twice to add two Shape Tracks. In the Explorer, navigate to Scene\_Root > Sources > Shape and then drag the default pose and the new pose onto the shape tracks in the Animation Mixer. Bring the value of the second shape back down to 0.000. Now create each new shape key as before, adding it to the Animation Mixer afterwards and reducing its value to 0.000. Once this is done, you will be able to blend between each extreme shape using keyframes on the values of each track."

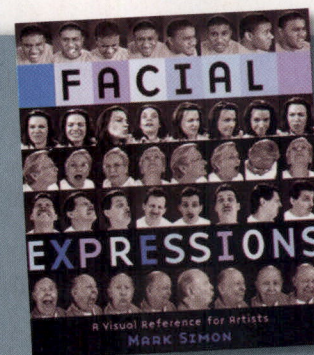
An extended version of this explanation, complete with screenshots, can be found in the Softimage section of the forum. Congratulations to a1m1m25: your prize is in the post.

### THIS MONTH'S QUESTION

Our question for issue 72 concerns *3ds Max*, and was submitted by JohnBo, who asks:

**"Does anyone know how to model an accurate bike chain?"**

Short, but sweet. Post your solutions in our *3ds Max* forum.



### This month's prize

Send in your solution to this month's brainteaser and you could win a copy of *Facial Expressions - A Visual Reference for Artists* by Mark Simon. An invaluable aid for character animators, the book contains images of over 50 male and female models with ages ranging from 20 to 83, photographed in a variety of facial expressions and from multiple angles. For more information, visit [www.watsonguptill.com](http://www.watsonguptill.com)

To enter, post your answers on our forum <http://forum.3dworldmag.com>





## Spend an evening with the Incredibles.

Escape Studios was recently appointed as Pixar's European training partner and reseller. As a result, Escape will be hosting an evening with RenderMan® including demos of the upcoming 'RenderMan® for Maya' and 'RAT'. Pixar will be talking about how they used RenderMan® in 'The Incredibles' and there will of course

be a complimentary bar! The evening will be held in London on Thursday 1st December. Places are extremely limited so please register early. Escape Studios is a hub of 3D and VFX expertise providing training, software and talent to the CG industries. To find out more and to register visit [www.escapestudios.co.uk](http://www.escapestudios.co.uk).





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# PIPE dreams

As movie tie-ins become an increasingly common sight within the games industry, much is being made of the potential of integrated production pipelines. A surprisingly controversial area for developers and technology firms, we investigate whether the re-use of film assets in games is the way of the future - or just a happy fantasy

BY JON JORDAN & BARBARA ROBERTSON

• No self-respecting Hollywood movie would be complete without its tie-in game. The current crop includes Disney Interactive's *The Chronicles of Narnia* and Ubisoft's *King Kong* (above). But the increasing tendency of such titles to share digital assets with the VFX team is prompting developers to rethink production workflow

Since the turn of the century, the marriage between Hollywood and the computer games industry has been sold as a match made in heaven. Film, with its megastars, its complex characterisation, and its audience focus on the living, breathing, hyperactive world behind the silver screen, is the ideal companion for an interactive medium that can put its Bond, Neo, Aragorn or Nemo? No problem, just switch on the PlayStation and let your movie experience continue. At least, that's the marketing spin employed in support of an ever-increasing range of film-to-game blockbusters, including upcoming titles such as *King Kong*, *The Chronicles of Narnia* and *Harry Potter and the Goblet of Fire*. But veiled by this glibness, a dramatic shift is occurring on the production line. Previously regarded as the minor partner, both in terms of business acumen and visual quality, games studios have raised their ambitions. As a result of new hardware such as Xbox 360 and PlayStation 3, developers have been revising their pipelines to take advantage of assets created by their movie partners - a process led by an influx of talent from the VFX industry.



Publisher Electronic Arts has led the charge, recently announcing a three-game deal with Steven Spielberg. The director will work with EA's LA studio, providing his expertise with respect to concept, design, story and artistic visualisation. But it's not just household names. Michael Talarico, EA's CG Supervisor for the *Harry Potter and the Goblet of Fire* game, carried out similar duties on the two *Tomb Raider* films, while ILM special effects veteran Habib Zargarpour is now EA Canada's Senior Art Director working on its *Bond* series, amongst others.

The company is also capitalising on the kudos of existing movies with its remakes of classics such as *The Godfather* and *From Russia With Love*. "We're now seeing the likenesses of actors such as Pierce Brosnan and Sean Connery in games based on the *Bond* films," says Ian Shaw, Chief Technology Officer at Electronic Arts Europe. "Probably the best visuals I've seen are Marlon Brando in the next-generation *Godfather* game."

Of course, before you can create film-quality visuals in a tie-in game, you need to be able to handle film-quality assets.

**"Current consoles are still a step below using film-resolution models. The next generation of games hardware will change all of that."**

IAN SHAW, CTO, ELECTRONIC ARTS EUROPE

"Technically, the current generation of consoles is still a step below using film models in terms of resolution, but next-gen consoles will change that," Shaw claims. "There's also a commercial question. Both films and games can spend a million pounds on CG characters, but that money is spent with a different focus. The game budget often goes on creating

● The first step to an integrated workflow is hiring VFX staff for games. Effects legend Habib Zargarpour now works on EA's series of James Bond titles

● Despite studios' aspirations, console technology remains a limiting factor. While *Harry Potter and the Goblet of Fire* is being released simultaneously as both a film and a game...

interactivity and optimising the characters for console hardware. But when we start spending many millions of pounds, I'm sure that this will generate the motivation to overcome these hurdles."

## PULLING THE STRINGS

Key to this process are technologies once restricted to the movie effects toolbox, such as complex shaders, HDR lighting, multiple layers of textures, and million-plus-polygon models. These are beginning to filter down to real-time graphics, massively reducing the differences in the way that films and games are made. It's common for VFX studios to share assets with external game teams, but it's now not just the usual mountains of concept material, miniatures and maquettes.

"Models, textures and shaders have been usefully converged for some time now, though a fair bit of work is required," says David Kirk, Chief Scientist at PlayStation 3 chip provider Nvidia. "Film assets that are appropriate for offline rendering can be simplified and recast for real-time rendering without losing the look and feel of the film. And it's much easier to modify and simplify film assets than to start completely from scratch."

Magnus Högdahl, Chief Technology Officer at Swedish developer Starbreeze Studios, who worked on the game based on *The Chronicles of Riddick*, broadly agrees: "Film models can now be used to trace normal maps for real-time use, as our high-resolution models already consist

**"Film assets that are appropriate for offline rendering can often be recast for real-time rendering without losing the look and feel of the original film."**

DAVID KIRK, CHIEF SCIENTIST, NVIDIA



## IN FOCUS The scale of the problem

Why convergence comes at a price: ten challenges movie-quality assets present to existing videogame-development pipelines

... being designed for current consoles such as PlayStation 2, the game cannot handle assets from its film partner. Only next-generation counterparts will permit such integration, says Ian Shaw of developer Electronic Arts

**"Film models can now be used to trace normal maps for real-time use. But I don't think reusing shaders will be feasible, even on Xbox 360."**

MAGNUS HÖGDAHL, CTO, STARBREEZE STUDIOS

of millions of triangles," he says. "Equally, basic diffuse textures and specular maps would be easy to use, since they can be scaled to the game's texture budget."

The problems, he explains, come with trying to reuse the more sophisticated material properties that really give a film its special look. "Because these are often encoded in textures, they're harder to use directly and would require us to use similar lighting models," he says. "As far as reusing shaders goes, I don't think it will be feasible, even on Xbox 360 or PlayStation 3. The best you could hope for would be to use offline rendering shaders as inspiration when trying to come up with a suitable cheat or approximation in real time."

### TYRANNY OF NOW

It's this difference between real-time and offline graphics that remains the major point for debate. Dan Prochazka, Product Manager for Animation Software at Autodesk, contends that it remains a fundamental barrier. "While I think the two industries are now closer in many ways, the priorities for high-quality film shots are different to the priorities for high-quality games," he argues.

"Visual effect shots count time per frame in minutes, while games developers count time in frames per second - that's 1,000 times faster than what's required for film." He also points out that, for films, visual accuracy and quality are the highest priority. "If it takes another minute or two to render a frame,

**1 MODEL SIZES**  
While offline models can be scanned for maquettes at the equivalent of millions of polygons, the restriction of real-time processing means games models max out at just 50,000 polygons.

**2 LIGHTING**  
High-quality techniques such as raytracing and subsurface scattering are so computationally intensive that the only way game artists can use them is to bake them into static textures.

**3 TEXTURE SIZES**  
With offline rendering, image quality is all that matters. This means artists can create gigabytes of complex materials. For games artists, even textures consisting of tens of megabytes end up being compressed.

**4 OFFLINE SHADERS**  
Shaders for offline packages like RenderMan are very different from real-time shaders, which have to be written specifically for the hardware they will run on. While the technology is improving, it's still restrictive.

**5 ANIMATION RIGS**  
Taking full advantage of the resolution available with offline rendering, film animation rigs are so complex that as yet, there are no ways to reduce their inherent subtleties to real-time formats.

**6 DATA TYPES**  
Movie-quality NURBS-based models still don't work well within game engines, especially in terms of dealing with seams and automatic level of detail.

**7 VOLUME OF DATA**  
The sheer scale of assets handled by visual effects studios means they require some of the biggest computer clusters in the world in order to move all of the data around. Your game console, this ain't.

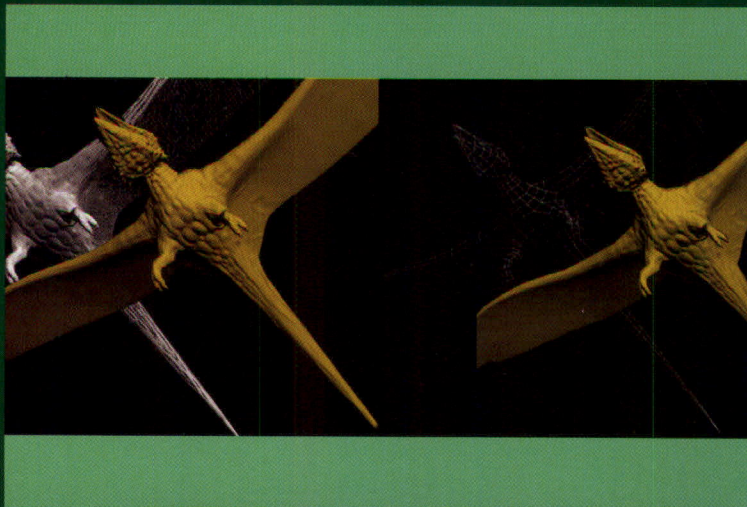
**8 DATA DENSITY**  
With each second of movie effects weighing in at over a gigabyte of assets, the volume of data also necessitates industrial-sized database and referencing systems - something game studios have little experience of.

**9 TOOLSETS**  
While 3D texturing packages such as BodyPaint 3D are slowly creeping into the hands of games artists, high-end procedural animation packages such as Houdini Master remain conspicuous by their absence.

**10 PRODUCTION SCALE**  
With team sizes in the hundreds and budgets of over \$50million, the scale of effects work outstrips even that of triple-A games, which typically have budgets of under \$20million.

• For all of their visual power, games still struggle to match film-quality imagery due to sheer volume of data required. Compare this still from Ubisoft's *King Kong* to the movie itself, pictured at the end of the article





● Typical of the problem game developers face when reusing movie assets, the image above shows a 400,000-polygon film-resolution model (left). Its game-ready companion on the right has just 2,000

well, so be it. For games developers, however, the priority is to perform at a certain framerate."

One knock-on effect is the density of assets. "In visual effects, textures can be anything up to a gigabyte, while games developers are either limited to much smaller texture map sizes or, increasingly, are relying on real-time shaders," Prochazka says. In addition, film models are usually created using curved surfaces such as NURBS, while game artists remain committed to real-time-friendly polygons.

"There's an assumption that convergence between games and films will happen and that it's a good thing. I'm not sure either is true," Prochazka says. "Companies will place the highest priority on making the offerings they deliver the best possible [for the market they work in]."

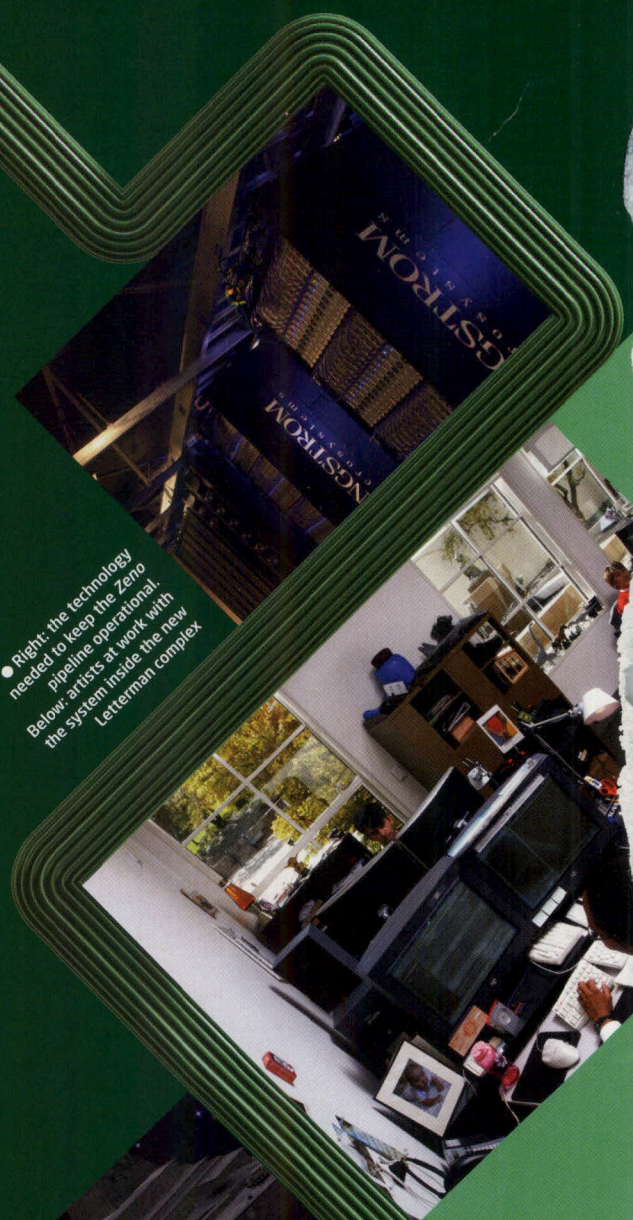
**"Visual effect shots count time per frame in minutes, while game developers count time in frames per second - that's 1,000 times faster than is required for film."**

DAN PROCHAZKA, PRODUCT MANAGER FOR ANIMATION SOFTWARE, AUTODESK

Others are more optimistic. Gareth Morgan, Softimage's Senior Product Manager, notes the problems but remains positive: "Real convergence is happening. Re-use is pretty much a done deal from a geometry and texture point of view. In 3D applications such as XSI, you can convert the high-frequency geometric detail found in film-resolution models into texture maps. These can then be used to simulate high-frequency details in conjunction with lower-resolution real-time models and the rendering acceleration found in game graphics hardware."

Although he agrees that there's a difference between the way an artist sets up a multi-pass offline render and a 60 frames-per-second scene for a game, he thinks there are further tangible benefits available in trying to unify these

● Right: the technology needed to keep the Zeno pipeline operational. Below: artists at work with the system inside the new Letterman complex





## CASE STUDY The Zeno production pipeline

Industrial Light & Magic and LucasArts share more than a building - they also share a pipeline. Could this be a blueprint for future film/game convergence?

**W**ith each new generation of consoles, a new generation of pundits predicts that games will soon look as impressive as movies. But while graphics have improved hugely, photorealism is still only a promise; game cinematics are still not yet truly cinematic.

Even so, most action and sci-fi feature films are spawning matching games that sometimes use CG assets from the films. And games development companies are actively recruiting visual effects wizards. These artists are applying film techniques to games and producing dazzling visuals. 'Cinematic', as gamers are now seeing, has as much to do with lights and camera work as with photorealistic rendering.

"Gamers are starting to embrace the sorts of techniques we've always used at ILM, especially when it comes to camera moves," says Cliff Plumer, Chief Technology Officer at Industrial Light & Magic. "Even introducing camera shake makes a huge difference. Things we take for granted in visual effects are changing videogames."

He should know: this October, Lucasfilm's game division, LucasArts, and its visual effects division, Industrial Light & Magic, moved into the new, state-of-the-art Letterman Digital Arts Center in San Francisco. The relocation brought together the two divisions into one facility for the first time. Now, approximately 700 artists have access to the same tools on one hybrid pipeline, dubbed *Zeno*. Around 450 of the artists work for ILM; the rest work for LucasArts. The merger has influenced the development of new kinds of tools.

"The move allows us to work together and optimise both," says Jim Ward,

Senior Vice President of Lucasfilm and President of LucasArts. "Once the next-generation games come out, people will be asking, 'How did they do that?'"

ILM's R&D department first began developing a new visual effects pipeline in 1998-99, spurred by the need to manage large scenes to create the pod race in *Star Wars: Episode I*. When George Lucas decided to consolidate and move the visual effects and games divisions of his empire to San Francisco, the studio decided to revamp ILM's pipeline in time for the move.

Thus, for the past 18 months, ILM's R&D department has been collaborating with LucasArts engineers. LucasArts' game engine, *Zed*, was folded into ILM's

**"Gamers are starting to embrace the sorts of techniques we've always used at ILM, especially when it comes to camera moves. Even introducing camera shake makes a huge difference."**

CLIFF PLUMER, CHIEF TECHNOLOGY OFFICER, INDUSTRIAL LIGHT + MAGIC

pipeline, *Zeno*. ILM replaced all its legacy tools with new *Zeno* modules, and created live links to commercial software. Both studios can access any module on the pipeline, and 3D artists can copy and paste between applications.

"We can extract [ILM's] technology in *Zeno* and incorporate it into our runtime editor," says Ward. "And we're working with them to forge new ground."

The first focus for LucasArts has been layout, animation, nonlinear editing, and lighting. "The list will continue to grow as they work on their next titles," says Cliff Plumer. "Physics and particles will be added early next year."

The layout tools live within a new previsualisation module that evolved from LucasArts' game engine. Because

the system is integrated within *Zeno*, it's tied into the whole production pipeline, including the asset-management system.

"Artists have access to the database from the previz tool," says Plumer, "and it's drag and drop. They can drop whatever they need into a 3D scene."

At *Zeno*'s core is a new, ILM-proprietary file format that allows *Zeno* to manage all the data on the pipeline. "*Zeno* is a fundamental toolset," Plumer says. "It's a timeline, scene graph and curve editor in one."

*Maya*, used for modelling, rigging and animation, is integrated into *Zeno*; the user interface is patterned after the *Maya* interface. Gamers can work on an asset in *Maya*, and publish it to *Zed*.

If they edit it in the game engine, it automatically updates in *Zeno*.

Non-destructive override capabilities are built into the pipeline, making it possible for artists to work on individual pieces of a project without having to worry about the book-keeping; *Zeno* keeps track of parts, versions and relationships. A new lighting tool called *Lux*, which is render-agnostic, handles pass dependencies.

One of the last pieces to be finished is a new motion-capture stage that becomes operational in November, combining performance capture with real-time compositing. In addition to optical capture,

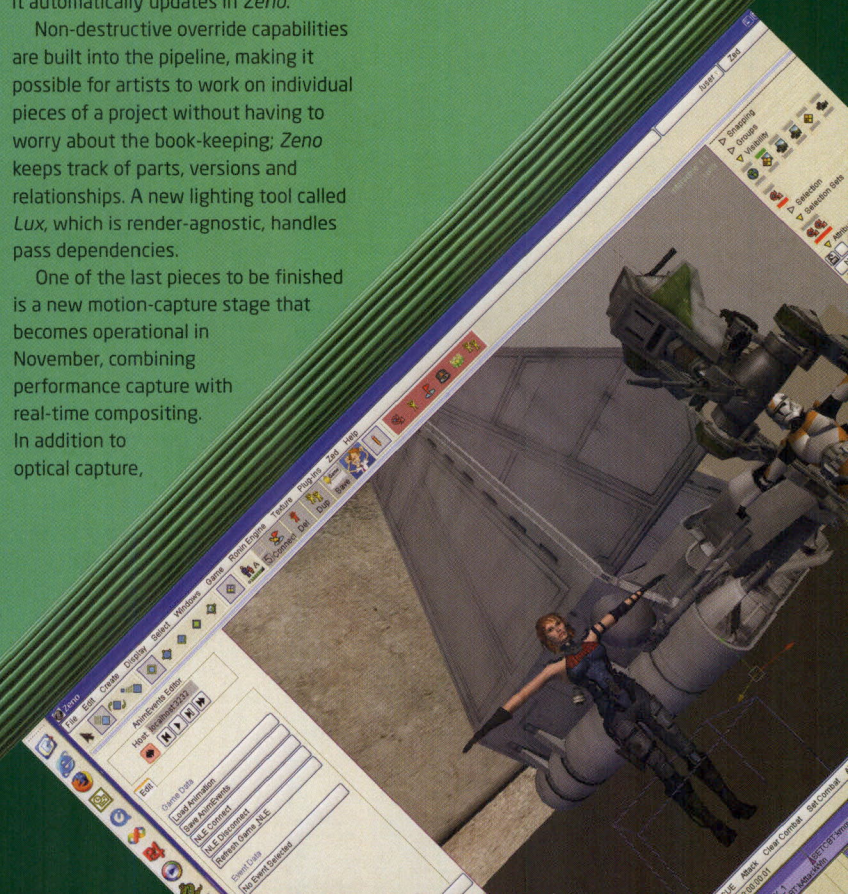
the studio has developed image-based motion-capture tools. "LucasArts has already booked motion-capture shoots for the stage," says Plumer.

It's too early yet to see the effect of mixing games developers and VFX artists on one pipeline, but it's easy to imagine what might happen. Sharing assets is one likely possibility - a few *Star Wars* assets moved to LucasArts before *Zeno*. But Ward believes that the real opportunities lie elsewhere.

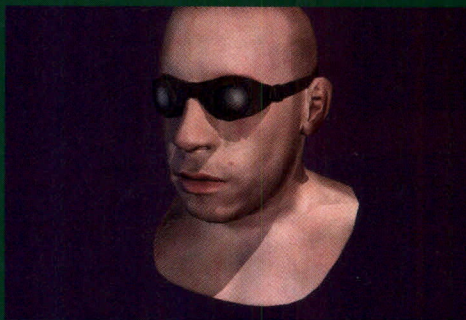
"We think the opportunities will move away from 'here's a movie, let's make a game,'" he says. "We have interactive games, but there's not a lot of depth to the stories. We're working on technology to bring more reality to the characters."

Right now, though, the biggest excitement for Lucasfilm is not the new technology, but the working culture it fosters. "There are so many common areas on the campus that we're starting to see the two artist cultures meeting each other," says Plumer. "There's a lot of conversation and communication between artist types who have worked for the same company for years, but have never met."

Below: the interface of *Zeno*, ILM/LucasArts' new production pipeline. The system allows artists on games (left) to share assets with their VFX colleagues







● One final obstacle to pipeline convergence is timing. Although Starbreeze Studios received a scan of actor Vin Diesel's head, the CG assets for the movie version of *The Chronicles of Riddick* were not finished until the game was close to beta testing

approaches. One area of value in this respect is animation. "There's a long way to go before we can reuse character animation, especially articulated character rigs and their skins. But, equally, there are lots of good reasons for it to happen," he says. "The extensive use of digital characters is clearly a common area between visual effects and games, and with many franchises publishing across both media, being able to reuse the digital character assets would be a significant benefit."

## SCHEDULING DIFFICULTIES

In fact, the biggest obstacles to film/game convergence may not be technical, but logistical. "To get proper synergies between projects, CG assets would need to be created well before filming has begun, while the game project would have to start at least a year before film production," says Starbreeze Studios' Magnus Högdahl. With *The Chronicles of Riddick* game, the film's finished CG assets weren't complete until the game was close to its beta testing phase. "We did get a 3D reference

**"There's a long way to go before we can reuse character animation, especially articulated character rigs and their skins. But, equally, there are lots of good reasons for it to happen."**

GARETH MORGAN, SENIOR PRODUCT MANAGER, SOFTIMAGE

scan of Vin Diesel's head - but all the modelling happened in-house," Högdahl adds.

The result is that, by the time most films have been greenlit to go into production, and the licensing negotiations are completed, games developers are already struggling to meet a 15-month deadline. It certainly doesn't give them much scope to also start wrestling with reworking half-finished movie visual effects assets.

But despite the difficulties, Nvidia's David Kirk still thinks that joint development teams are the future - or one part of the future, at least. "It's possible to envision a joint team producing a game and a film together from the same assets, although I think one would have to lead, and the other follow," he says. "Forcing the two to progress at the same time and

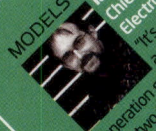
pace seems likely only to degrade the quality of one or the other."

So will true hybrid production pipelines, such as that linking LucasArts and ILM (see Case Study, previous page), really become the norm? Only time will tell. For now, the union between games and visual effects remains more a marriage of convenience than the 'happily ever after' scenario dreamed up by the PR agencies. But while the relationship may not always be easy, there are, it seems, no immediate grounds for divorce. ●

The *King Kong* and *Chronicles of Narnia* games are scheduled for release in November. Both movie and game versions of *King Kong* will feature in issue 73 of *3D World*

## TALKING POINT | Where next for convergence?

### MODELS AND TEXTURES



**Ian Shaw**  
Chief Technology Officer,  
Electronic Arts Europe  
"It's all about model resolution and shade quality. PlayStation 2-generation games are limited to 5,000 polygons with two texture passes. As we shift to next-gen consoles, we're finding polygon counts can go above 10,000. And instead of texture passes, we're using 10 layers of real-time shaders. That's a huge step forward visually, and most of that benefit comes from shifting from texture maps to real-time shaders."

### RENDERING TIMES



**Magnus Högdahl**  
Chief Technology Officer,  
Starbreeze Studios  
"In real-time graphics, we always have to make trade-offs between quality, quantity and frame rate. With offline rendering, you don't have to trade quality or quantity for speed, since you can just throw more computing power at the problem, or wait longer for the rendering. Eventually, content creation will be the only limiting factor for both real-time and offline graphics, but we're far away from that today."

### GPUS AND SHADING

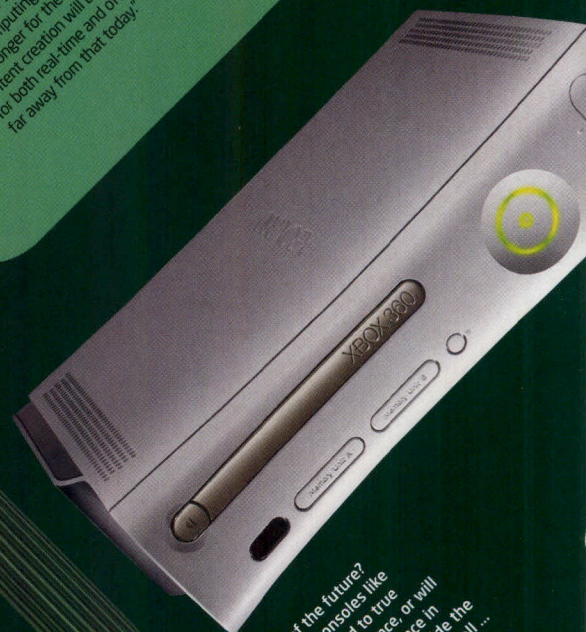


**David Kirk**  
Chief Scientist,  
Nvidia  
"As GPU programmable shading and geometry get more sophisticated and powerful, there is increasingly less difference in the performance and quality of the two media. Eventually, film assets will form the core assets for games. Fortunately, for companies such as Nvidia, this is a moving target. Although real-time rendering will inevitably be simpler than film rendering for quite some time, both will get better and better."

### WORKING CULTURES



**Dan Prochazka**  
Product Manager for Animation  
Software, Autodesk  
"I don't see the next-generation userfulness of convergence between films and games, while they're more powerful, a fundamental difference in priorities will continue to prevent the sharing of assets. What makes a beautiful film will remain different enough from what makes a captivating game for their art assets not to be interchangeable."



● The way of the future? Can next-gen consoles like the Xbox 360 lead to true film/game convergence, or will a fundamental difference in priorities continue to divide the two worlds? Only time will tell...





Coming up | NEXT ISSUE

# IN ISSUE #73

WHAT WETA DID NEXT  
6 DECEMBER 2005



# REVIEWS

HARDWARE / SOFTWARE / BUYER'S GUIDE



● On test this issue (clockwise from top left): Kodak EasyShare Z7590, Sony Cybershot DSC-W5, Olympus μ [mju:], Fujifilm FinePix Z1 Zoom and the Pentax Optio SVi







# Budget cameras

**GROUP TEST** A digital camera is a crucial tool in your 3D arsenal, but as we reveal, you don't need to break the bank any more to afford one

BY MAT BROOMFIELD

**N**owadays, 3D artists and programmers increasingly work with real-world as well as CG images. Whether you're capturing images to use as textures, or photographing objects and scenes to use for reference, a digital camera is a vital tool. *Photoshop* makes it easy to create your own HDR images and produce realistic light and reflection maps from your own photos, and many people are also using low-cost photogrammetry packages for converting a series of photos into models without having to manually create geometry.

So, how much do you need to spend to get a decent digital camera? In issue 64, we looked at mid-priced professional cameras costing between £500 and £1,000. Now that you can buy a 5-megapixel camera for under £200, we wondered how useful it would be to the 3D professional.

Five megapixels gives you an image approximately 2,500x1,900 pixels, which is far bigger than the average monitor resolution. Even

at a professional 300dpi, that still gives you a printed image size of 8.3x6.3in, yet you can print up to small poster size without a dramatic loss of quality.

There are two main differences between budget cameras and professional ones, and the first is the size of the lens. Budget cameras are mostly pocket-sized, and have lenses a centimetre or so across. The bigger the lens, the more light you can get; the more light, the better the photograph. Secondly, some of the professional cameras have filter rings and replaceable lenses, enabling you to attach powerful zooms and coloured filters.

Most also have full manual modes, enabling the experienced user to take immediate control over each parameter, from shutter speed and aperture to white balance and exposure compensation. Most of the cheaper cameras offer some manual controls, but not as many.

The budget cameras we've selected here are designed to make everyday photography fast and easy. And to help you evaluate them, high-resolution reference shots are included on our cover CD.

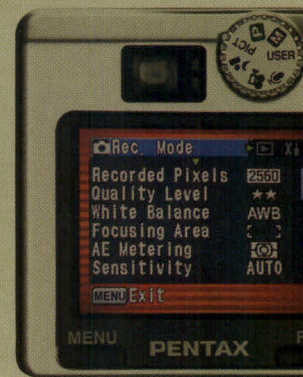
## THE BUDGET CAMERAS WE'VE SELECTED ARE DESIGNED TO MAKE PHOTOGRAPHY FAST

### TALKING POINT | It's all about metering

**THERE ARE MANY** things that make a good photograph, including skill, inspiration and a quality camera, but the true foundation of all good photography is light. Getting the right amount of light is absolutely crucial, and unless you're taking manual control over aperture size and shutter speed, the factor that determines the correct amount of light is the camera's metering system, which literally measures

the brightness of the scene and adjusts the exposure accordingly.

There are various ways of metering an image, but in a cheap click-and-go camera, you need the default setting to be both intelligent and accurate. It was in this area that the really good cameras in our group test truly distinguished themselves, and the losers came out wanting. Turn the page to find out the results.





## DETAILS

PRICE  
• £213 / \$374\* / €310\*  
\*Currency conversion

PLATFORM  
• PC / Mac

RECOMMENDED SYSTEM  
• Windows 98+  
• Mac OS 9.2+  
• USB interface

MAIN FEATURES  
• 5-megapixel  
• 5x optical zoom  
• Sound and video recording (AVI)

MANUFACTURER  
Pentax

WEBSITE  
www.pentax.co.uk



## DETAILS

PRICE  
• £298 / \$523\* / €433\*  
\*Currency conversion

PLATFORM  
• PC / Mac

RECOMMENDED SYSTEM  
• Windows 98SE+  
• Mac OS 9+  
• USB interface

MAIN FEATURES  
• 8-megapixel  
• Easy scene modes  
• 4fps burst mode

MANUFACTURER  
Olympus

WEBSITE  
www.olympus.co.uk



# Pentax Optio SVi

With its easy-to-navigate controls and classic styling, the Optio SVi looks very promising indeed

# Olympus μ[mju:] DIGITAL 800

It's not just the artist formally known as Prince that has a silly symbol for a name



The Optio SVi has exactly the ergonomics you want from a compact digital camera. While it's small enough to fit into your pocket, it has grips that ensure you won't cover the lens with a finger, and it has a reassuring weight and robustness about it. Controls are comprehensive, yet easy to access in a hurry.

With a maximum resolution of 2,560x1,920, the SVi has a 5-megapixel resolution. This camera provides good clarity, and even when you zoom right in, you don't get the halos or antialiasing artifacts that are visible with some cameras at borders of sharp contrast.

Sadly, the camera's colour reproduction leaves something to be desired. The fact that it does a reasonable job in some circumstances (such as when the scene is well-lit, or with close-up flash photography), leads us to assume that the problem here is light metering. It does offer three different modes, including a multi-segment mode that should be able to adjust the contrast based on varying light conditions across the entire screen. However, it didn't seem to cope very well with backlit scenes.

In some cases, it oversaturated the foreground while, in others, it just underexposed the entire image. By trial and error, you can improve the results but, for most users of point-and-click digital cameras, the automatic mode should assign the best metering or scene mode.

One feature that does make the camera stand out is its burst mode, which, unlike the competition, enables you to take a continuous stream of photographs until the memory card is full. The SVi also provides you with the option to record short movies and long, mono audio clips.

In good lighting conditions, the Optio is a decent camera with straightforward controls. In difficult light, we would prefer to use one of the other models on test.

## VERDICT

### PROS

- Impressive burst mode
- Easy to handle
- Reasonable night shooting

### CONS

- Poor metering results
- Inadequate macro range

RANGE OF FEATURES	5
VALUE FOR MONEY	6
OVERALL	5



When you're selling an 8-megapixel digital camera for under £300, you're not selling to

David Bailey or Lord Lichfield. So, the easier the camera is to use, the more value your users will get from it.

The μ[mju:] (pronounced mue) incorporates some terrific ideas to help you get the best photographs. The best of them is the Scene mode. This shooting mode offers a screen full of options, enabling you to select from 19 shooting scenarios, including landscape, night-portrait, snow, fireworks, and even text documents. When you select one, the camera adjusts the aperture, shutter speed, flash and metering modes to facilitate the best possible picture.

Another idea we really love is the Guide button. Press this and you can read electronic guides on how to take good photos in varying conditions – forget having to take manuals out with you.

All of this is interesting, but how good are its photos? The answer is: variable. At 3cm, the μ[mju:] has the closest macro (close up) lens in this test but, even at 20cm, using a flash, it produced a decent enough (if oversaturated) image with

good clarity and no nasty edge distortion. Its night shooting was better than some, but still left room for improvement.

With a maximum shutter speed of 1/2,000th of a second, the μ[mju:] can capture the very fastest action dead in its tracks. If you find that you always miss those action shots, use the camera's burst mode, which can capture up to 10 images at 4 frames per second.

The μ[mju:] is sold as an 'all-weather camera', and when we got caught out in a deluge, it weathered the experience without adverse effects. Our verdict is the Olympus μ[mju:] DIGITAL 800 is versatile and easy to use, though photographic results vary from one picture to the next.

## VERDICT

### PROS

- Weatherproof
- High resolution
- Super Macro mode

### CONS

- Variable performance
- Poor internal RAM

RANGE OF FEATURES	7
VALUE FOR MONEY	6
OVERALL	6



## DETAILS

PRICE  
• £247 / \$433\* / €359\*  
\*Currency conversion

PLATFORM  
• PC / Mac

RECOMMENDED SYSTEM  
• Windows 98SE+  
• OS X 10.2.8+  
• USB interface

MAIN FEATURES  
• 5.1-megapixel  
• 3x optical zoom  
• Sound and video recording

MANUFACTURER  
Fujifilm

WEBSITE  
www.fujifilm.co.uk



## Fujifilm FinePix Z1 Zoom

Here's a camera from Fujifilm that's compact enough to fit into the smallest of pockets

**F**ujifilm has introduced many innovations to the digital camera market, but this camera's greatest benefit is simply the fact that it's tiny, but still takes decent photos.

The Z1 is smaller than a packet of 20 cigarettes, and it has a highly optimised interface that's fast to navigate and easy to use – largely because it offers less options than any other in this test, with few controls or ways to compensate for challenging shooting conditions.

Apart from the lens cover, which also doubles as a power switch, the Z1 has no external moving parts. It has a 3x optical zoom, but the lenses are all internal. This makes it ideal for awkward shooting locations, like photographing textures halfway up a mountain.

However, there are compromises. It's the only model that doesn't have a viewfinder, so you have nothing to use instead of the power-hungry LCD screen. It only comes with six basic shooting modes, and even these are not nearly as adjustable as with the Olympus or Kodak cameras. You can't manually control shutter speed or aperture size, and there are no alternate light metering modes to

choose from if the default doesn't suit. We had problems in overcast conditions, causing oversaturated images.

Macro photography was crisp. Night images were reasonable, though the flash lacked power. But there was one real problem: the camera doesn't have a tripod mount like all the others do, so you can't keep it still during the long exposure times required for low-light shooting.

The camera can only be recharged on a special stand, so you can't charge up spare batteries while the current one is in use. Moreover, photos must be transferred to your computer via the stand as well – less convenient than the USB connection.

A great, highly portable camera for everyday snaps, but not for serious work.

## VERDICT

## PROS

- Compact
- Reasonable photos

## CONS

- Limited options
- No tripod connection
- Batteries are not removable

RANGE OF FEATURES	4
VALUE FOR MONEY	5
OVERALL	5

## DETAILS

PRICE  
• £196 / \$344\* / €285\*  
\*Currency conversion

PLATFORM  
• PC / Mac

RECOMMENDED SYSTEM  
• Windows 98+  
• Mac OS 9.1+  
• USB interface

MAIN FEATURES  
• 5.1-megapixel  
• 3x optical zoom  
• Sound and video recording

MANUFACTURER  
Sony

WEBSITE  
www.sony.co.uk



## Sony Cyber-shot DSC-W5

As the cheapest camera in our group test, this one is bound to be an under-performer, right? Guess again!

**L**ike the Pentax, the Cyber-shot has an immediate feel of quality, with a robust case and a nice weight to it. While it does use rechargeable batteries, it's the only model to use off-the-shelf AAA-size, so if you run out of charge on an important shoot, you can easily buy more. This is critical, because the other models use pricey proprietary batteries that have to be ordered.

The camera also uses Memory Stick storage, and while this is no more popular than XD Picture cards, SD memory, SmartMedia or Compact Flash, it's widely compatible with other Sony devices such as laptops and camcorders. This facilitates easier multimedia integration, and more convenient transfer of images between Sony devices and printers.

This 5.1-megapixel Cyber-shot offers comparable resolution to the other models here, but the quality of its metering is superb, enabling it to produce correctly exposed images in challenging situations. Compare the Sony church photo (see our cover CD), against the Pentax one to see an example of how shots could be lost by poor metering.

With seven shooting modes, plus full auto and manual, the camera falls between the extensive options of the Olympus and the simplicity of the Fujifilm. However, the number of modes is less important than the camera's intelligence in taking fully automated pictures, especially as this is how most users tend to use it.

On that front, the camera scores admirably, producing great shots in most situations. It created naturalistic colour using the flash for lighting fill-in, but its night photography wasn't as good, with poor flash illumination and a heavy colour cast caused by overhead lighting. Not great if you're into low-light photography.

The Cyber-shot is a versatile camera at a great price. Thoroughly recommended.

## VERDICT

## PROS

- Good-quality photos
- Low cost
- Easy to use

## CONS

- Poor night shooting

RANGE OF FEATURES	8
VALUE FOR MONEY	10
OVERALL	8





## THIS ISSUE'S WINNER

# Kodak EasyShare Z7590

Want to do more with your photographs? Here's a little camera from Kodak that thinks big

### DETAILS

**PRICE**  
• £255 / \$400 / €371\*  
\*Currency conversion

**PLATFORM**  
• PC / Mac

**MINIMUM SYSTEM**  
• Windows 98  
• Mac OS 10.2.3  
• USB interface

**MAIN FEATURES**  
• 5-megapixel  
• 10x optical zoom  
• 3x digital zoom  
• Shutter speed 16-1/1,000s (manual)  
• Video recording (MOV)  
• Uses SD memory

**MANUFACTURER**  
Kodak

**WEBSITE**  
[www.kodak.co.uk](http://www.kodak.co.uk)

**W**ith more than 100 years of photography expertise, it's no surprise that Kodak is the manufacturer of our group test winner. However, when you look at the company's record in the digital camera market, this camera's proficiency was by no means a foregone conclusion.

The EasyShare is unabashedly targeted at computer-illiterate home users. That's the bad news, because the hand-holding software tends to make you work how it wants you to, rather than facilitating your own personal workflow. In fact, this is the only model that doesn't automatically show up as a removable device when you connect it to your PC – bad news if you want to use an iPod to store photos while you're on holiday.

Putting photo transfer aside, this is a wonderful piece of kit, especially for the money. Its lens is twice as big as any of the others, and it has a massive 10x optical zoom with a 3x digital zoom – the 35mm equivalent of a 180mm telephoto lens. The others all have a large digital zoom (which reduces the quality of your photos), and a relatively small optical zoom.

The camera can take macro photos from a distance of 12cm. This isn't particularly close, but the colours and quality of its macro images are by far the best and most accurate in our test.

## IT DID A GREAT JOB, SELECTING THE OPTIMUM EXPOSURE AND BRINGING OUT PERFECT DETAIL

The Z7590 is a 5-megapixel camera with a maximum resolution of 2,576x1,932. It offers five shot sizes between 5 and 1.8 megapixels, and two quality settings. It comes with 32MB of internal memory, which is barely enough to do anything. It uses Secure Digital (SD) memory, available in sizes up to 2GB.

It also has a burst mode that operates at two frames per second for up to nine frames. This is slow compared to some cameras, and its usefulness will depend on the action that you're shooting.

What makes this camera impressive is its photos. It may not transfer pictures how we would prefer, or have a fast sequence shooting mode, but it takes terrific pictures, even in challenging

conditions. We threw strong backlights, twilight macro, night portraits and more at this camera and, without exception, it did a great job, selecting the optimum exposure and bringing out perfect detail every time.

It has 14 preset scene modes, in addition to sport, portrait, auto and manual modes, and however we used it, it did the job.

For dependable, low-cost point-and-shoot photography, it really doesn't come better than the Kodak Z7590.

### VERDICT

#### PROS

- Intelligent metering
- Excellent zoom
- Loads of scene modes

#### CONS

- Annoying image transfer
- Slow burst mode

**RANGE OF FEATURES** 9  
**VALUE FOR MONEY** 10  
**OVERALL** 9





ONLY THE KODAK  
PRODUCED GREAT  
SHOTS EVERY TIME,  
IN EVERY SITUATION

## CONCLUSION | Sony and Kodak battle it out for first place

**W**e were interested to see if there was any value whatsoever in low-cost consumer digital cameras, and what we've seen this issue has come as a very pleasant surprise.

While the optics are not as good as the pro cameras that we covered in issue 64, with care and a good understanding of lighting, positioning and colour, you can take great photographs with all of these models. Some make the process easier, taking care of more of the adjustments that eliminate the hit-and-miss element from photography.

We were surprised to see that SmartMedia and Compact Flash memory weren't used by any of the cameras, but we were informed by our local Jessops that these are becoming obsolete as the lower power consumption of SD, XD and Memory Sticks extends battery life.

One irritation is the fact that, apart from the Sony (that uses AAAs), the cameras all use proprietary Lithium ion

batteries. These may offer longer life, but are costly to replace and, worse still, can't be bought in high street stores in an emergency. Worst of all is the FinePix Z1, whose battery can only be recharged in-situ within the camera, unless you choose to buy an optional battery charger.

Because these are consumer cameras, money has been spent on support for audio and video where you may have preferred extra photographic functionality. However, a chance event while you're out may catch your eye, so video capability comes in handy. It depends how you look at it.

All of the cameras provide excellent control ergonomics, enabling you to easily select the required functions with minimal learning time or reference to the manuals. Ultimately, despite great aesthetics, clever ergonomics, cut-throat pricing, versatile operating modes, and the capability to record audio and video, our primary consideration had to be image quality. We determined this by taking a series of

similar images: a church against a bright sky for metering evaluation, an ancient gravestone for CCD and lens quality, a close-up of a rose to test fill-in flash and macro functionality, and a midnight street corner to test night portrait mode and mid-distance flash. Where it was offered, we chose an appropriate mode for each photograph, further specifying metering if the option was available.

We were most happy with the capabilities of the Sony and Kodak cameras to cope with awkward lighting, and only the Kodak produced great shots every time in every situation. In fact, the Kodak did an excellent job with the two challenging backlit shots, yet the night shot also offered more natural colours than any other camera. This latter shot was the one area where the Sony faltered, providing otherwise excellent results at a low cost.

The Kodak isn't the cheapest model, but its versatility and dependability outweigh the small price discrepancy. ●

## COMPARISON CHART

MODEL	Actual resolution	Optical/digital zoom	Macro	Shutter speed	Burst mode	Aperture	Included memory/ type	Auto/manual focus	Electric/manual zoom	Sound/video recording	UK price (excluding VAT)	Overall score
PENTAX OPTIO SV1	2,560x1,920 5mp	4x/4x	12cm	4s - 1/2,000s	Y	F2.8 - F4.7	32MB/SD memory	Y/Y	Y/N	Y/Y	£213	5
OLYMPUS µ(MJU-) DIGITAL 800	3,264x2,448 8mp	3x/5x	3cm	4s - 1/2,000s	Y	F2.8 - F4.9	19MB/XD picture card	Y/N	Y/N	Y/Y	£298	6
FUJIFILM FINEPIX Z1 ZOOM	2,592x1,944 5.1mp	3x/5.7x	8cm	4s - 1/1,000s	N	F3.5 - 4.2	16MB/XD picture card	Y/N	Y/N	N/Y	£247	5
SONY CYBERSHOT DSC-W5	2,592x1,944 5.1mp	3x/6x	6cm	4s - 1/2,000s	Y	F3.5 - F8	32MB/Memory Stick	Y/N	Y/N	Y/Y	£196	8
KODAK EASYSHARE Z7590	2,576x1,932 5mp	10x/3x	12cm	16s - 1/1,700s	Y	F2.8 - F8	32MB/SD memory	Y/N	Y/N	N/Y	£255	9





## DETAILS

### PRICE

• £2,695 / \$3,495 / €4,250

### PLATFORM

PC

### RECOMMENDED SYSTEM

- Windows XP Pro SP2
- 500MHz Pentium III or AMD Processor
- 1GB RAM
- 2GB swap space

### MAIN FEATURES

- *Character Studio* enhancements, including Twisty Bones
- *Mental Ray* enhancements and performance increases
- Pelt Mapping for complex mapping solutions
- Vault asset management

### DEVELOPER

Autodesk

### WEBSITE

[www.autodesk.com](http://www.autodesk.com)

# 3ds Max 8

New character tools, asset management, better polygon wrangling and unlimited Mental Ray rendering. But is Max 8 simply dotting i's and crossing t's? **BY PETE DRAPER**

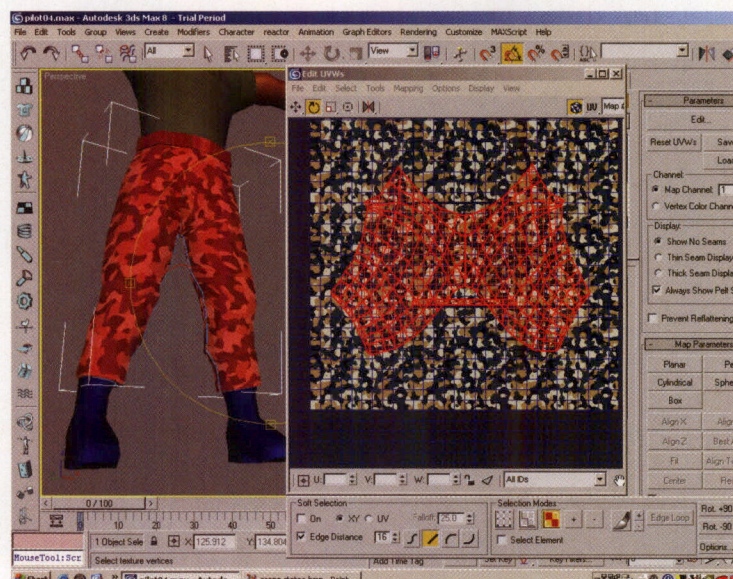


This is our second review of *3ds Max* in six months, following on the heels of the Subscription-only 7.5 upgrade. But with 7.5 adding Cloth, Hair and Fur, what has Autodesk kept in reserve for this full-point update? In short, does *3ds Max 8* have anything to compete with the 'hero' features of previous major releases?

On first inspection, the answer to this question appears to be 'no'. *3ds Max 8* is a mixed bag of updates, with additions across the board. However, there are some noticeable additions, including better integration of *Character Studio*, which was brought into the Autodesk fold just over a year ago. In particular, some of its features are now made available to non-biped objects.

The Motion Mixer is one such tool, allowing you to load in motion clips for standard skeletal or custom rigs. This is a simple case of clip assignment, scaling and weighting to get the desired effect. Other welcome new character animation tools include Twisty Bones (see screenshot opposite), Euler Curve animation, Bend Links and Pelvis as Ball Joint.

But while much of the new functionality in *3ds Max 8* is character-driven, there are



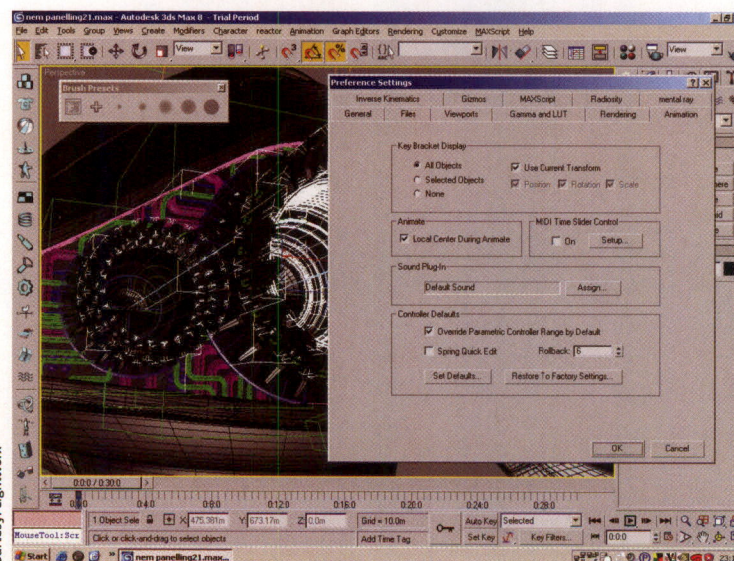
• *3ds Max 8* allows users to easily unwrap geometry by 'cutting' seams into the mesh and pulling and relaxing the geometry to flatten (or 'Pelt') it out, ready for painting

several important exceptions. Mapping has had a bit of an overhaul – a minor tweak here, a feature addition and modification there – and something called Pelt Mapping has been added. This is a godsend.

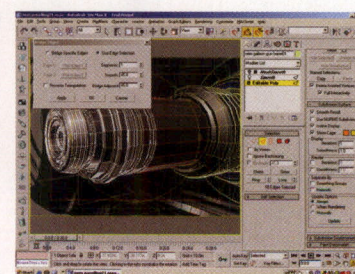
Pelt Mapping does pretty much what the name implies: you can slice out a piece of a mesh by defining cuts along its edges,

put it into the mapping UI, then unwrap it by defining the outline of the relax cage and automatically pulling and relaxing so that no stretching or folds are left. If there is a problem, you simply go back in, tweak any cuts as necessary and re-pelt. A standard checker map can be applied and tested in the viewport to make sure there isn't any bad stretching, and then the entire template can be exported for painting in your favourite 2D software. If you really wanted to, you could pelt an entire character with a single texture map, but it's less fiddly to do it in mapping chunks.

All in all, Pelt Mapping cuts down the annoying process of setting up mapping coordinates for complex meshes, and lets



• The main UI has had some commonly tweaked features added to the interface, such as direct access to default key tangent types



• Adding to the existing polygon-wrangling arsenal, *3ds Max 8* has some intuitive additional edge selection and editing tools

## RELATED PRODUCTS

- *LightWave 3D 8*  
Reviewed: Issue 53
- *Maya 7*  
Reviewed: Issue 70
- *Softimage XSI 5*  
Reviewed: Issue 70

Model courtesy: Lightwax

Model courtesy: Lightwax

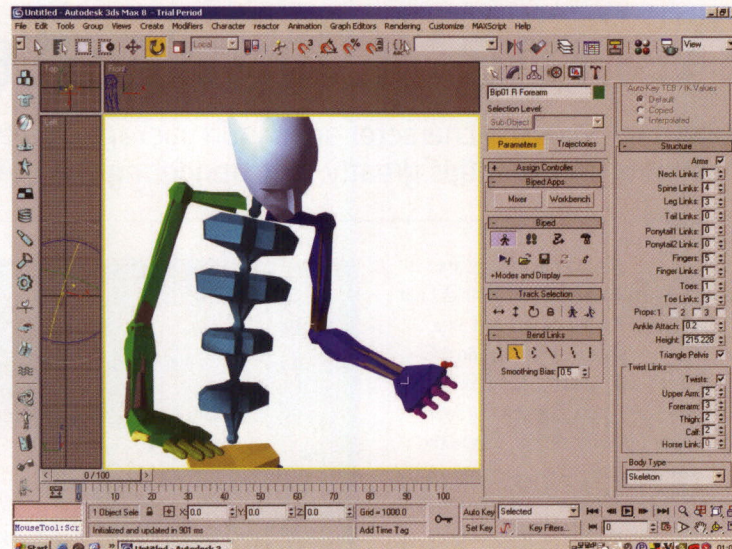


you concentrate more of your time on the fun part of texturing: painting the textures.

As with other Autodesk products, *3ds Max 8* comes with Vault – an asset-tracking system designed to control user access to data to ensure that no updated files accidentally get overwritten. Forming a client/server set-up, users can log into a project vault and check out files to edit and update them, or add extra assets. For medium- to large-scale projects, even those created by individual artists, this can be helpful for keeping track of a project's development, and is compatible with other asset-tracking systems that support Microsoft *SourceSafe* and *Perforce*. As with setting up any database management system, it takes a little while to get used to, but it's fairly straightforward.

## MINOR IMPROVEMENTS

In addition to the more major features, there have been several smaller 'grab bag' additions to the software, which make working with *3ds Max 8* a lot nicer than in previous versions. Most of these additions are designed to fix some of the little niggles that experienced users have put up with for several versions – and, in



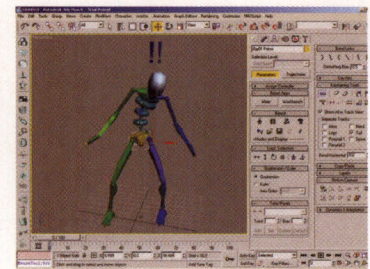
● Now covering all major (and minor) limbs, the new Twisty Bones feature gives character animators improved mesh deformation when working with skin twisting on legs and arms

gripes about previous versions of the software – though some of the changes have been a long time coming.

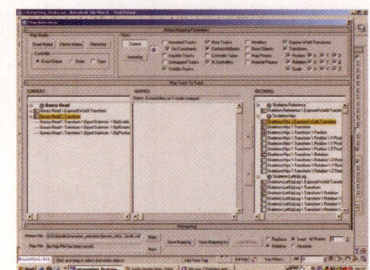
There are also some very noticeable performance improvements in other areas, such as rendering – particularly with *Mental Ray*. Performance is dramatically improved, with render times on some scenes now a

*Backburner* (standalone licences are required to render out MI files with ray.exe), we would have dropped the overall score for the review down to an eight. Even though the list of new features is fairly long, there didn't seem to be a serious contender to the hero features in previous releases (such as Particle Flow or Light Tracer/Radiosity). However, this last-minute addition (it wasn't announced at Siggraph) seriously boosts the software's credibility and value, especially if you're working with medium- to large-scale render farms.

The price hasn't changed since the last version, but what's new? If you're on the subscription programme, you'll already have received *3ds Max 8* for a couple of pints shy of £300, plus all of the extras released throughout the previous year. This is substantially less than the price of an upgrade or full software maintenance contract for most of *3ds Max*'s major competitors. Of course, we still want our 'Particle Flow-esque' schematic material editor UI in the next release – but then, we say that every time. ●



● Also new is the option to animate the Biped's pelvis in three degrees of freedom independent of the centre of mass: instant Tom Jones action!



● The Retargeting UI has been introduced to fix any inconsistencies in animation retargeting from one character to another

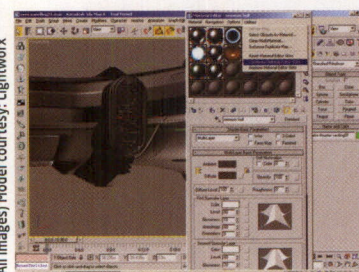
## THOUGH THE LIST OF NEW TOOLS IN 3DS MAX 8 IS LONG, THERE IS NO SINGLE MAIN 'HERO' FEATURE

many cases, have had to run custom scripts to sort out. These include being able to empty the Material Editor at the touch of a button, setting parametric controller ranges to infinity, Skinning enhancements, a new Limit controller (see screenshot), Curve Editor improvements, UI amendments, XRef tweaks and polygon editing enhancements. There are far too many to list, and most, if not all, appear to have been added to make the user's life easier. This is a prime example of the developer listening to the end user's

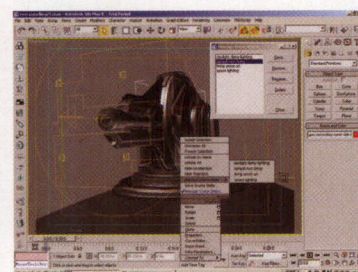
fraction of previous their previous values. Again, there are some additions to the feature set in this particular area, which further establish the integration of the renderer within the core package.

However, it's not all good news. While viewport performance has improved somewhat, it's still inferior to that of other competing 3D packages when working with large data sets.

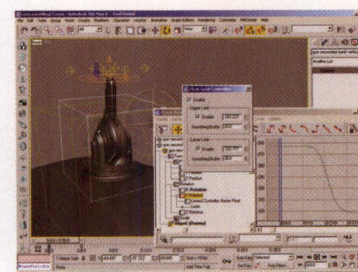
In fact, if it wasn't for the inclusion of unlimited *Mental Ray* rendering via



● The Material Editor has also had a few user interface additions to make working with it an easier process



● Instead of saving multiple versions of the same file when tweaking lighting and colours, 'versions' can be saved within the same file



● A new Limit controller has been added, which limits an object's animation range to prevent accidental range extremities

## VERDICT

### PROS

- Pelt Mapping
- Unlimited *Mental Ray* rendering

### CONS

- No updated Particle Flow items
- Some installation problems with MR Satellite
- No schematic Material Editor UI

RANGE OF FEATURES

8

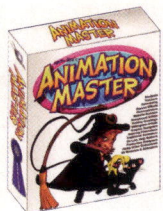
VALUE FOR MONEY

9

OVERALL

9





## DETAILS

### PRICE

• £170\* / \$299 / €250\*

\*Currency conversion

### PLATFORM

PC / Mac

### RECOMMENDED SYSTEM

#### PC

- Windows 2000 / XP
- 450MHz processor
- 256MB RAM

#### Mac

- PowerMac with OS 9.2 or OS X 10.3.4 or greater
- 450MHz processor
- 256MB RAM

### MAIN FEATURES

- Intuitive user interface
- Powerful animation tools
- A:M Composite
- Multipass renderer
- Fully customisable Toon- or Anime-style Shader/Render
- Drag-and-drop interface

### DEVELOPER

Hash, Inc

### WEBSITE

www.hash.com

## RELATED PRODUCTS

- Softimage XSI 5

Reviewed: Issue 70

# Animation:Master 2005

Already a powerful character animation package, the twelfth full-point release of Animation:Master adds greatly to its rendering and post tools

BY SHAUN FREEMAN



ver the past ten years, *Animation:Master* has built itself a reputation as a character animation tool

that even a solo artist can afford. But while its \$299 price tag used to set it apart from the field, recent cuts in the prices of all-round 3D applications such as *Softimage XSI* (the *Foundation* edition of which now sells for \$495) and *LightWave 3D* (\$795) have seen these rival packages beginning to encroach on this market sector. So how has developer Hash, Inc responded?

The answer is: by rounding out the software's rendering and image-processing capabilities. *Animation:Master 2005* (its twelfth full-point release) includes a number of new tools to improve post-processing. The most important of these is the new A:M Composite feature. A:M Composite is geared towards quick readjustments of lighting effects within a shot after the rendering process is complete, and uses the new OpenEXR format to save multiple buffers.

This feature dramatically increases the ease and speed with which *Animation:Master* can turn out quality renders. Although not as fully featured as *Softimage XSI*'s compositor – which, it should be noted, is only available in the more expensive *Essentials* and *Advanced* editions of the software – A:M Composite is a big step



● *Animation:Master's* Hair feature has improved considerably in the latest release, particularly its shading method, and now allows for complete control over the entire length of the hairs

towards a complete editing and post-processing toolset.

While A:M Composite allows for the easy adjustment of lighting effects, other post-processing tweaks have not yet been built in – so although undeniably powerful, the feature is not all-encompassing, extra passes still being required to adjust other aspects of the final render. But when used in conjunction with a dedicated compositing package such as *After Effects*, A:M Composite provides more control over the look of rendered imagery than ever before.

The renderer itself has gained improved raytraced soft shadows, allowing for much softer and more realistic shadow effects,

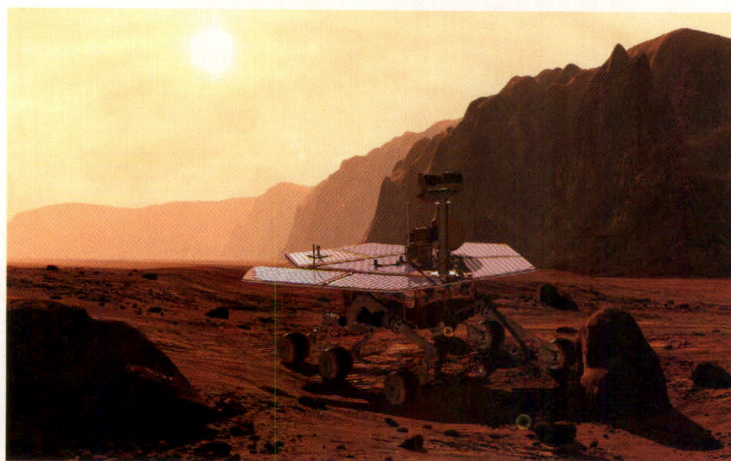
and has incorporated the ability to render out in PNG, BMP, JPEG and OpenEXR formats, as well as TGA sequences, AVI files or *QuickTime* MOV files. HDRI has also been implemented within *Animation:Master 2005*, which substantially improves the quality and level of control over the lighting and colour balance of a final render.

## INTUITIVE WORKFLOW

But despite these powerful new features, *Animation:Master's* greatest strength is still its animation workflow. The power to animate any property of the model in question – either directly or by setting up simple pose sliders to control multiple properties – make animation an intuitive process, enabling you to spend more time actually animating an effect than figuring out how it should be done.

Version 12 has re-implemented the option to pin down keyframes and channels (in the timeline editor) of bones and other animation parameters. This is particularly useful, since it enables you to quickly work on different aspects of the animation in question without the necessity of scrolling through the entire list of bones or properties being animated, and goes a long way to increasing the speed with which an animation can be created and finessed.

Cloth has been part of *Animation:Master* since version 8, but has been changed

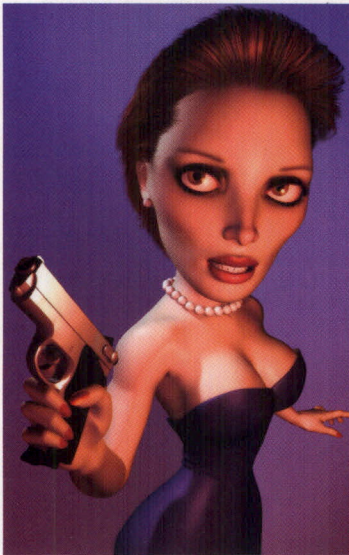


● As well as character animation, it is possible to create high-quality scenic environments with *Animation:Master's* powerful multi-pass renderer, as illustrated by this Mars landscape shot

Image © Shaun Freeman, Jamster International

Image © Fabrice Fave





Images (left and near right) © Jim Talbot

● Although *Animation:Master* makes it simple to model hard-surface objects such as this gun ...



● ... the software's primary strength remains in modelling, rigging and animating organic objects and characters, such as the aristocratic gent shown in the image above

substantially in the latest release. It's now present as a material that can be dragged and dropped onto the appropriate part of the model, and instructed to behave as either a deflector (a solid object) or as proper cloth. The settings can be changed and edited in the material itself (rather than in the action or choreography) to help refine the properties of the cloth type in question,

modelling system, and thanks to the simple and powerful constraints system, can be rigged and ready to go in fairly short order. Controlling mesh distortion, often a time-consuming and tedious process in other packages, is simply dealt with using a combination of CP weights, Smartskin, and intermediate bones. Texture work is similarly easy. Decaling is a simple case of aligning

example). This, along with the UV editor, makes it easy to tweak the placement of images, for fine control of a render.

*Animation:Master's* continuing development of its software development kit (SDK) has also allowed external programmers to write useful (and invariably cheap or free) plug-ins that can be easily incorporated into the program. One such new tool is a Newtonian dynamics plug-in, which allows for hyperrealistic hard-body dynamics based on the Newton physics engine technology. Implemented by the productive programmer Steffen Gross, this demonstrates the SDK's power to supply even high-end functionality to professional users.

## ALONG WITH ITS NEW FEATURES, A:M'S GREATEST STRENGTH IS STILL ITS ANIMATION WORKFLOW

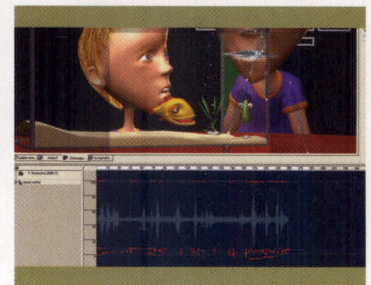
which makes it much easier to tweak settings to produce the required effect.

Of course, before you can begin animation, you need a model to work with. Characters can be modelled easily using A:M's tried and tested spline-based

the image and dropping it onto the appropriate parts of the model. Other images that need to be placed in the same spot can simply be dropped onto the image container and changed to suit the model (for use as displacement or bump maps, for



● Intuitive animation tools enable you to tell stories without getting bogged down with unnecessary technical details



● The tackable feature in A:M's timeline removes the necessity to scroll through the PWS looking for the item to be animated

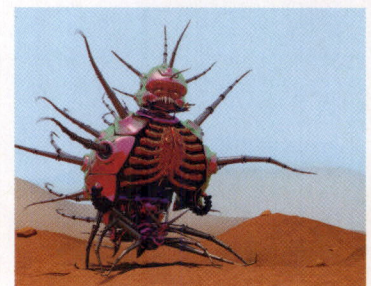


Image © John Keates

● Complex (and often creepy) characters can be rigged using *Animation:Master's* powerful constraints system



Image © Fabrice Fave

● *Animation:Master's* Radiosity feature allows for ultra-realistic lighting and shadows, as demonstrated in this impressive lounge shot

## VALUE FOR MONEY

So can *Animation:Master 2005* continue to hold its own in today's increasingly crowded sub-\$1,000 software market? While the prices of other applications are certainly dropping, those closest to A:M are cut-down versions with limited feature sets; as mentioned earlier, the *Foundation* edition of XSI lacks the compositing tools of its siblings, along with hair, fur and advanced cloth. In this context, *Animation:Master* remains outstanding, providing its full feature set at a single price.

For the new user, or for the small studio, *Animation:Master 2005* offers exceptional value for money. As well as providing novice animators with a simple, enjoyable and intuitive 3D environment within which to work, it enables professionals to produce exceptionally high-quality animation at a fraction of the cost of its competitors. ●

## VERDICT

### PROS

- Intuitive animation workflow
- Powerful particles system

### CONS

- Limited to the out-of-the-box renderer

RANGE OF FEATURES	9
VALUE FOR MONEY	10
OVERALL	9



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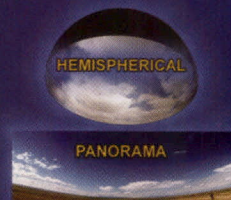
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General  
Purpose



**ST 4**  
Classic  
Stonework



**ST 7**  
European  
Textures



**ST 10**  
Roofing  
Materials



**Animated  
Fire**



**ST 2**  
Rustic  
Exteriors



**ST 5**  
Downtown  
& Signs



**ST 8**  
Absolute  
Metals



**ST 11**  
Oriental  
Textures

**PREMIUM  
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**City  
Building  
Models**



**ST 3**  
Ultimate  
Interiors



**ST 6**  
Classic  
Architectural



**ST 9**  
Fabulous  
Fabrics



**Amazing  
Sci-Fi**



**Home  
& Office  
Furniture  
Models**



**Suburban  
House  
Models**

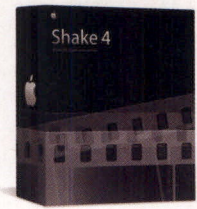




# Shake 4

Having already shaken up the compositing market, Apple's industry-leading package gets a host of new features

BY CHRIS KENWORTHY



## DETAILS

### PRICE

Mac

• £2,000 / \$3,000 / €2,000

Linux

• \$4,999 (contact your local reseller for more details)

### PLATFORM

Mac / Linux

### RECOMMENDED SYSTEM

Mac

• Mac OS X 10.3.9

• 1GHz or faster PowerPC G4 processor

• 512MB RAM

Linux

• Red Hat Linux 9+

• 1GHz or faster processor

• 512MB RAM

### MAIN FEATURES

- Multi-plane compositing to mix paint, images and effects in 3D
- Enhanced node view for a more intuitive workflow
- Tracking on roto shape points for time-saving animation
- 32-bit Keylight and Primatte industry-standard keyers
- Truelight monitor calibration to monitor accurate colour output
- Optical flow-based retiming to create smooth slow motion

### DEVELOPER

Apple

### WEBSITE

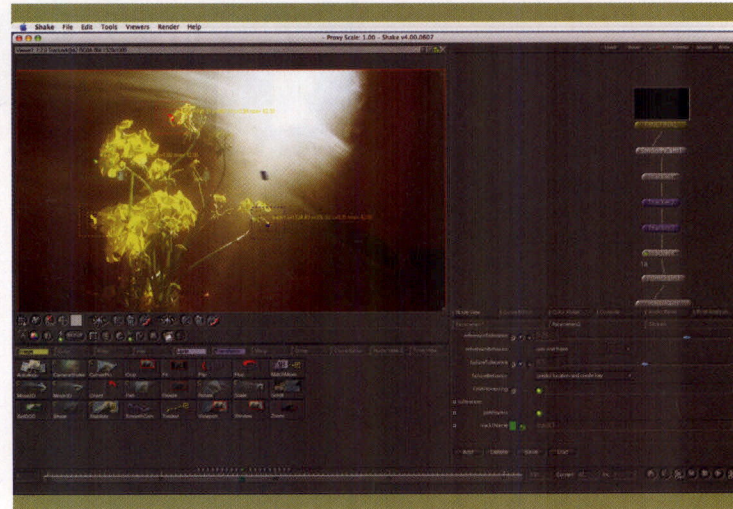
[www.apple.com](http://www.apple.com)



You can't watch special features on a DVD for too long without seeing the results of *Shake*. It's used to composite images, blend layers, paint out mistakes and add special effects. An industry leader for quite some time, *Shake* is now being pitched as a tool suitable for large companies and the humble desktop guru. It's an accurate claim, and the new features make this a worthwhile upgrade.

*Shake* doesn't feel like a true Apple application, largely because when you use a File In node to get your clips into the application, you're confronted by a messy and confusing window. It takes some getting used to, and it's probably about time Apple converted *Shake* into a true Mac application. More worrying is *Shake*'s apparent instability, even when running under OS X 10.4. Put *Shake* on a dedicated G5 with plenty of RAM, it's rock solid. However, if you leave even your mail application open, expect the occasional crash. This isn't what Mac users, or pro compositors, expect, and this issue should be addressed.

Thankfully, these are the only problems with *Shake 4*, and everything else is a pleasant surprise. There are many useful additions that won't make headlines, but which are well worth having. One example is Auto-Align. Take three photos and, if they overlap at all, Auto-Align will stitch them together seamlessly. This is a compositor's dream and it saves lots of messing around in *Photoshop*, but there are also several major improvements that keep *Shake*



● *Shake 4* handles depth, blur and light beautifully, so that 3D lighting effects are relatively simple to create and adapt to the requirements of your project

ahead of the competition. One of the most impressive is the Optical Flow-based retiming, which enables you to re-map the speed of a clip. This is nothing new, except that the results are truly remarkable. Even when slowed down to a fraction of its original speed, film, DV or HDV footage has the smooth motion of true slow-motion film. The benefits of this to the industry will be enormous, with no need for special filters, or (even worse) complex shooting with a high-speed camera.

## TOP TRACKING

Multi-plane compositing is another welcome addition, which enables you to combine 2D paint, images and effects in a 3D environment. You can even paint a 2D layer in the 3D space, should you want to. This

ability to get outside the image, which has been present in *After Effects* for years, can provide perspective on a complex project.

Perhaps the best new feature is the ability to track motion data and apply it to roto shape points. Film somebody in front of a bluescreen and you probably want to put an animated garbage matte around them before keying. Rather than animating by hand, you can track points on the image and use the data to animate the matte.

*Shake 4* doesn't pretend to be a solution for all aspects of film and video workflow. Although *After Effects*, *Combustion* and *Fusion 5* give you access to titling tools and particle effects, *Shake* concentrates on providing an efficient compositing and effects workflow, and its raw power will keep it at the forefront of the industry. ●



● With multi-plane compositing, you can see a 3D view of your layers being arranged, and combine 2D paint, movies and effects in 3D



● With Keylight and Primatte, you have both of the industry-leading compositing tools at your disposal, as well as standard filters

## VERDICT

### PROS

- Affordable pro compositing
- Many time-savers
- Excellent keying

### CONS

- Sometimes unstable
- Steep learning curve
- Messy file inputs

RANGE OF FEATURES

8

VALUE FOR MONEY

9

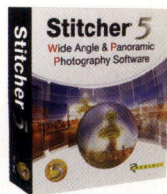
OVERALL

9

## RELATED PRODUCTS

- *After Effects 6*  
Reviewed: 47
- *Combustion 4*  
Reviewed: 65





# Stitcher 5

Combine multiple photos or scans into vast, panoramic 2D or 3D images more easily than ever, and play 'spot the seams' (bet you can't!)

BY MAT BROOMFIELD

## DETAILS

### PRICE

• £339\* / \$580 / €499

\*Currency conversion

### PLATFORM

PC / Mac

### RECOMMENDED SYSTEM

#### PC

- Windows 2000 / XP
- 1GHz Pentium 4 processor
- 512MB RAM

#### Mac

- OS X 10.3
- 533MHz Power PC G4 processor
- 512MB RAM

### MAIN FEATURES

- Stitches multiple photos into panoramas
- Converts between panorama types
- Outputs in many formats including QuickTime VR
- Can be used to create environment maps

### DEVELOPER

Realviz

### WEBSITE

www.realviz.com



here's a greater need than ever before for huge, high-resolution images and panoramas, but you don't have to buy a £10,000 high-res camera, or a power tripod or custom lenses to create such images. With *Stitcher 5*, you can quickly combine ordinary photographs with very little fuss.

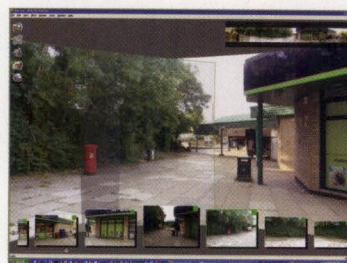
*Stitcher* has been around for quite a while now, and it's already quite adept at combining photos. However, this latest version aims to simplify your workflow by automating much of the process.

Once you've loaded the images to be stitched, there are essentially three stages to go through: stitching, alignment and equalisation. The biggest time-saver is auto-stitching. We loaded several series of 16 images, hit the 'auto stitch' button, and the program chugged away for a couple of minutes before producing a fully stitched panorama. At each time of asking, it did the job perfectly, producing seamless stitches. You can view a low-quality 3D preview of the stitch in the main window, which has also been optimised over previous versions.

Once you've stitched your images, you need to align the panorama. This basically determines where the axes and horizon are in relation to the photos. Again, this can be achieved with a single click. The final stage is equalisation, which ensures that, while your images inevitably have different lighting conditions depending on the camera's orientation to the scene's light-source, these differences are eliminated in the final panorama, resulting in a single, consistently lit scene. This is a great time-saver, but it's very irritating that the results



● *Stitcher's* quick preview mode enables you to quickly assess the quality of the equalisation, but it's too small to see the stitching properly before you finally render out



● *Stitcher 5* has a new optimised interface that makes it easy to create panoramas. Mouse control icons are still sorely lacking, though

of the equalisation are not at all accurately reflected in the working window, forcing you to perform test renders to check the success of equalisation. However, there's a quick preview option, enabling you to see a reduced version of the final render.

## PATCHED UP

All of the automated functions may also be performed manually to cope with those challenging jobs. One feature we were particularly pleased with was the option to manually exclude part of one overlapping image from the final render.

We photographed near a car park and, in one photo, a child was getting out of a car. We simply stencilled her out of the offending image within *Stitcher*, and data was taken from the overlapping image to fill the missing space (all images should overlap by about 30 per cent on each side).

If you need to perform a manual stitch, you can now place reference markers to identify identical reference points on the two images. *Stitcher* automatically identifies the camera lens used where possible, although you can specify the lens if this information cannot be extracted automatically. This information is then used to correct distortion. Furthermore, you can specify when certain images are heavily distorted (such as those that are affected by a fish-eye lens), and the program will perform a deeper topographical correction.

The interface has also been updated. For instance, the toolbar has been removed from the top of the screen and replaced by a series of floating buttons on the left. Unfortunately, there are still no navigation buttons. It's ridiculous that panning around your scenes still requires a keyboard press – has the last 15 years of 3D software interface design totally bypassed Realviz?

A good step-by-step tutorial is still absent yet sorely needed, though the rest of the manual is well written. It would also be nice to have had the option to manually paint stencils within the program rather than defining them as polygon areas.

Unfortunately, the greatest problem with version five is the fact that the program leaches memory, gradually giving you less and less as you work, until it eventually crashes. Realviz is aware of the problem and has produced a patch that fixes the instability issues. You shouldn't be affected by the problems we experienced during the review process if the patch is implemented, but we'll keep our fingers crossed for you all the same.

There's no doubting that *Stitcher 5* is an excellent program, and when it's running in a stable way, we're happy to get behind it wholeheartedly. It could still definitely benefit from a few minor improvements here and there, but it's so quick and easy to use that we still recommend it as an essential part of every digital photographer's toolkit. ●

## VERDICT

### PROS

- Almost completely automatic
- Outputs and converts a large number of formats

### CONS

- Unstable without the patch
- Needs a quickstart guide

### RANGE OF FEATURES

10

### VALUE FOR MONEY

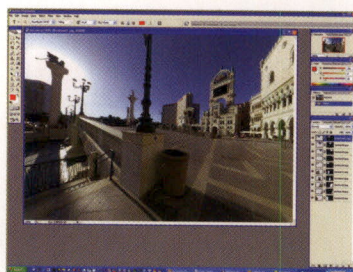
8

### OVERALL

8

## RELATED PRODUCTS

- Photoshop CS2
- Reviewed: issue 58

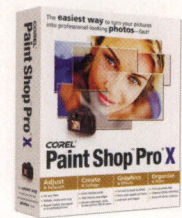


● You can export your panoramas as layered, blended Photoshop images



# Paint Shop Pro X

In our last review, PSP established itself as a serious alternative to Photoshop for 3D work. But did Corel hear our plea for proper alpha channel support? **BY CHRIS OLLIS**



## DETAILS

### PRICE

• £85 / \$129 / €119  
• Currency conversion

### PLATFORM

PC

### RECOMMENDED SYSTEM

• Windows 2000 / XP  
• 1GHz processor  
• 512MB RAM

### MAIN FEATURES

• Hands-on drawing tools  
• Instant results with photo enhancements  
• Detailed learning and training section

### DEVELOPER

Corel

### WEBSITE

[www.corel.com](http://www.corel.com)

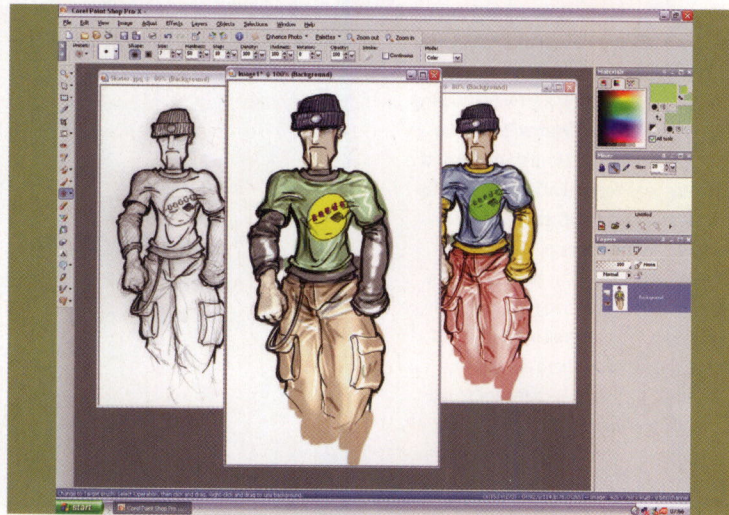


A year ago, we reviewed *Paint Shop Pro 9 (PSP 9)* and sang its praises as an inexpensive alternative

to *Photoshop*: an ideal tool for texture work and general 3D assistance. Its one failing was the less-than-perfect alpha channel support – an area we suggested that Corel improve if it wanted to capture more of the 3D market. So, as we waited for the demo to install, we sat and wondered ... did this happen?

The answer is an emphatic 'yes'. While it's still in the guise of a mask layer, Corel has developed something far more akin to *Photoshop's* alpha channel – it's actually visible in the standard Layers window, but you don't even have to switch to Channels to view it! Editing the mask layer is as simple as you might expect: just paint on black and white and *PSP* automatically displays the transparency of the image to which it is applied. Making it a genuine alpha channel is a simple matter of Layers > Save Mask to Alpha Channel, before saving in the file format of your choice. Lovely.

Existing 3D users of *PSP* may already be realising why they should upgrade. But for those who need extra persuasion, *PSP* has always been strong on tools aimed primarily at the digital photographer. This release is no exception – the whole package is crammed full of clever little photo functions and easy-to-use tools. The most impressive has to be the Makeover suite, with three intuitive brushes: Blemish Fixer (click on the spot to replace and *PSP* sources colour from the neighbouring pixels); Toothbrush (click on a tooth and it brightens the whole smile); and Suntan (a genuinely impressive skin shader that adds a believable bronze to



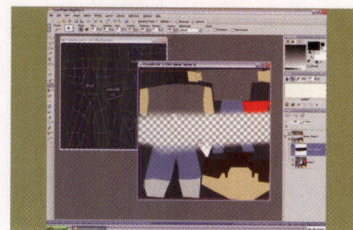
● *PSP X* is extremely fast, from initial scanning to colouring and re-colouring. It's the ideal tool for quickly throwing down some design sketches, or for aiming for that full-blown 2D masterpiece

skin tones), which can quickly turn *Readers' Wives* into *Vogue* supermodels. On top of these are a vast selection of one-click photo fixes, noise removers, distortion correctors, red-eye removers and colour balancers – all ideal for fixing up the texture photos you took in less than perfect conditions.

Beyond the fancy features is a solid array of tools similar to those in competing packages: natural paint, filter and text effects are covered, as are vector graphics, all to a more than competent level. Image manipulation and layer tools handle almost any texture challenge you can throw at *PSP*, while the screengrab and browser find themselves in almost constant action.

## A MUST FOR BEGINNERS

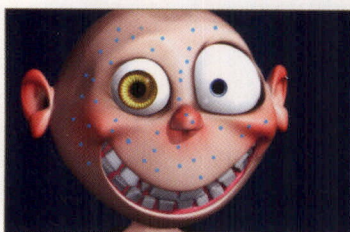
*Paint Shop Pro X* is the jack-of-all-trades *PSP* has always been. While some of the tools are not as sturdy as its leading



● Finally, *PSP* gets workable alpha support. The enhanced mask layers are simple to use, perhaps even more so than its competitors

competitor, it does have the advantage of being able to do a dozen other things at the same time, and all for a fraction of the cost.

For anyone starting out in 3D, *Paint Shop Pro* is invaluable: easy to use, able to do everything you need it to, and capable of doing it quickly. Then, when the cheques are rolling in, you could consider spending the extra cash and buying *Photoshop* for its remaining additional power. ●



● Before: pale skin, grey teeth, spotty complexion. This rendered fellow needs the super-quick Makeover tools from *PSP X*



● After: a few quick clicks and his skin is smooth, his teeth brighter. Perhaps we went a little too far with the suntan, though

## VERDICT

### PROS

• Stacked full of drawing tools  
• Great for photo manipulation  
• Inexpensive

### CONS

• It's still not quite *Photoshop*

### RANGE OF FEATURES

8

### VALUE FOR MONEY

10

### OVERALL

9



# PLUG-IN



# MMTrack for Maya

Does this new Realviz plug-in mean that Maya Complete users need no longer aspire to Unlimited's Maya Live camera-tracking technology?

BY GARY NODEN

## DETAILS

### PRICE

• £447\* / \$790 / €690

\*Currency conversion (excluding VAT)

### PLATFORM

PC / Mac / Linux

### RECOMMENDED SYSTEM

• Any system capable of running Maya 6+

### MAIN FEATURES

- Integrated matchmove plug-in
- In-built Assistant for simple set-up
- Matchmoves to various types of motion
- Accounts for lens distortion
- Works in conjunction with MatchMover Pro 4

### DEVELOPER

Realviz

### WEBSITE

www.realviz.com

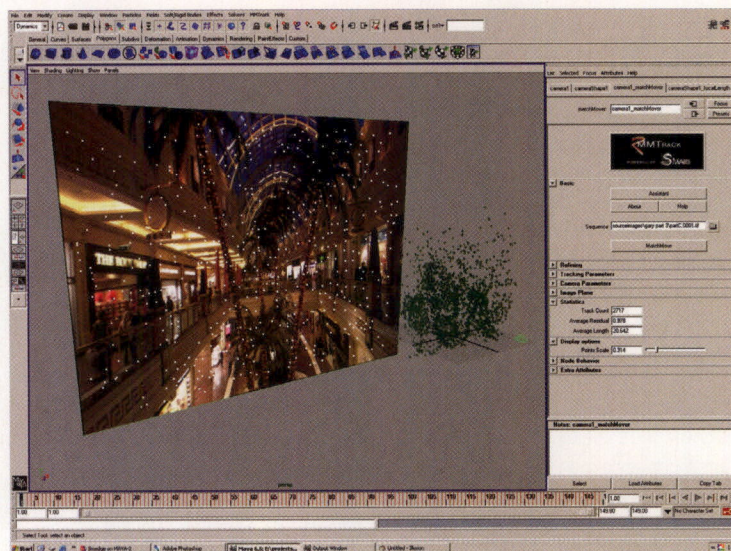


Realviz is definitely not the new firm on the block when it comes to tracking software, having created the popular *MatchMover Pro*. Now approaching its fourth release, the software was recently used in *Troy* to effortlessly create 3D camera moves from live action footage.

*MMTrack* is the company's first foray into taking its impressive tracking software and using it in a matchmove plug-in for Maya. Of course, there are already standalone tracking packages for Maya out there, not to mention *Maya Unlimited's* built-in Maya Live tracking tool – so just how efficient is *MMTrack*, and does it mean that *Maya Complete* users can avoid an expensive upgrade to *Unlimited*?

Working on the same principles as similar tracking packages, *MMTrack* takes live action and attempts to calculate how the real-world camera moves by using pixel tracking. It claims to be able to handle changes in the camera focal length while tracking, which is something some of the standalone competition find difficult. Armed with this knowledge, we decided to take *MMTrack* to task to see what it could do.

Once installed and licensed, *MMTrack* sits under a single menu that's always visible. To use it, you open up the Assistant program, follow a simple list of questions about your images and then hit the Matchmove button in the Attribute Editor and wait. Like other packages, it prefers less frantic camera moves and preferably deinterlaced DV or film footage for optimum tracking, but it works well without. Using a piece of live action previously matched on *Maya Live*, *MMTrack* created an accurate



● After set-up through the *MMTrack* Assistant, the track of this shot (before solving) took about 20 minutes, which is considerably faster than *Maya Unlimited's* built-in tracking tool, *Maya Live*

track in about a quarter of the time, and sometimes as fast as a tenth of the time.

The main reason behind this is that *MMTrack* uses very similar tracking technology to *PFFTrack*, *boujou* and most other standalone tracking software, in that it picks its own tracking points (unlike the hand-picking system in *Maya Live*), making it a far more enjoyable and less complicated process. This, coupled with the price difference to an upgrade to *Maya Unlimited*, make *MMTrack* a good solution for *Maya Complete* users. It's also fashionably cheaper than its big brother, *MatchMover Pro*, which weighs in at just under \$4,000, or *boujou* at a hefty \$10,000.

## COST ISSUES

However, there are standalone packages that are cheaper still. For instance,

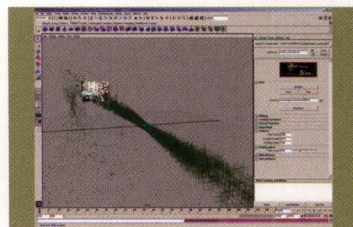
Andersson Technologies' *SynthEyes*, which was recently used by the Peerless Camera Company in the movie *The Brothers Grimm*, exports to almost every single 3D and 2D package and it costs a mere \$399.

We also recently reviewed The Pixel Farm's *PFFHoe*, which tracks DV footage and exports to most of the more familiar 3D packages. It costs a measly £49 (\$85). With standalone tracking software that costs less than a family takeaway, Realviz may find *MMTrack* hard to sell in what's turning out to be a highly saturated area of the 3D and compositing market.

As a plug-in tracker for *Maya*, *MMTrack* is very good indeed. In terms of speed, it beats *Maya Live* into a bloody pulp. With so much competition around, though, we wish it the best of luck – we think it's going to need it. ●

## RELATED PRODUCTS

- *PFFMatch 1.5*  
Reviewed: Issue 57
- *PFFHoe*  
Reviewed: Issue 62
- *boujou 3*  
Reviewed: Issue 64
- *PFFTrack 3*  
Reviewed: Issue 66



● The joys of interlaced and shaky DV camera shots. A walk through Manchester turns into a nightmare, with 24,450 green locators...



● ...but *MMTrack* makes short work of it. The wide dispersal of points above (viewed through the camera) indicates an accurate matchmove

## VERDICT

### PROS

- Simple installation
- Handles pans and zooms together

### CONS

- Dislikes interlaced footage
- Cheaper trackers available

RANGE OF FEATURES

9

VALUE FOR MONEY

7

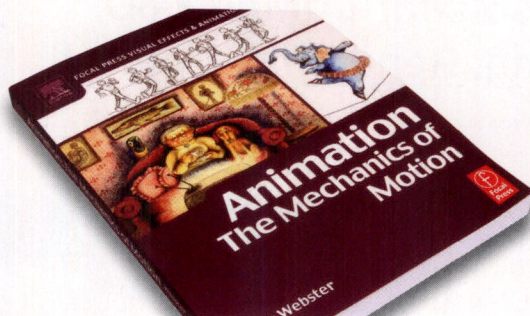
OVERALL

8



## DETAILS

AUTHOR  
Chris Webster  
PUBLISHER  
Focal Press  
PRICE  
£25 / \$37 / €37\*  
\*Currency conversion  
PAGES  
260  
ISBN  
0-240-51666-4



## Animation – The Mechanics of Motion

**A**nimation - *The Mechanics of Motion* is a comprehensive guide from Chris Webster, Head of Animation at the University of the West of England.

Steering clear of any specific software packages, 2D or 3D, it clearly describes all the important principles of motion that any budding (or even experienced) animator should know about, whether they're working with traditional or digital media.

Covering everything from familiar walk cycle techniques to character design, animal motion to sound synchronisation, each

section is succinct and easy to follow, no doubt due to Chris' teaching experience.

While it will obviously be compared to Richard Williams' *The Animator's Survival Kit*, this is never a bad thing and, in this case, the book easily holds its own by offering a fresh approach and more compact format that should stand happily beside its peers on every animation studio bookshelf.

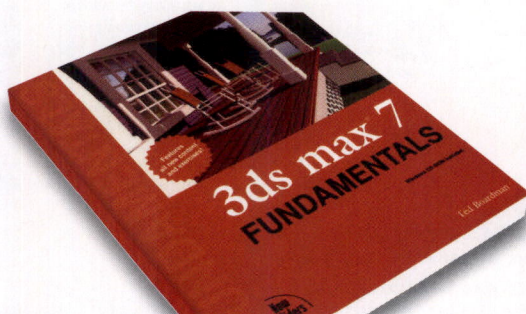
## VERDICT

A well-researched guide that should be of use to animators of all skills and abilities

9

## DETAILS

AUTHOR  
Ted Boardman  
PUBLISHER  
New Riders  
PRICE  
£33 / \$45 / €34\*  
\*Currency conversion  
PAGES  
544  
ISBN  
0-321-32138-3



## 3ds Max 7 Fundamentals

**T**his is a book that, unlike most tutorials, is designed to be read cover to cover and in the order that it is printed.

Working with new content instead of updating previous editions of the book, *3ds Max* guru Ted Boardman progresses through the ground rules of the software, moving on through tutorials that introduce, inform and illustrate each feature relevant to a particular tutorial, while guiding readers through the hows and whys for each single step. The accompanying scenes are basic and hardly jaw-dropping from an aesthetic

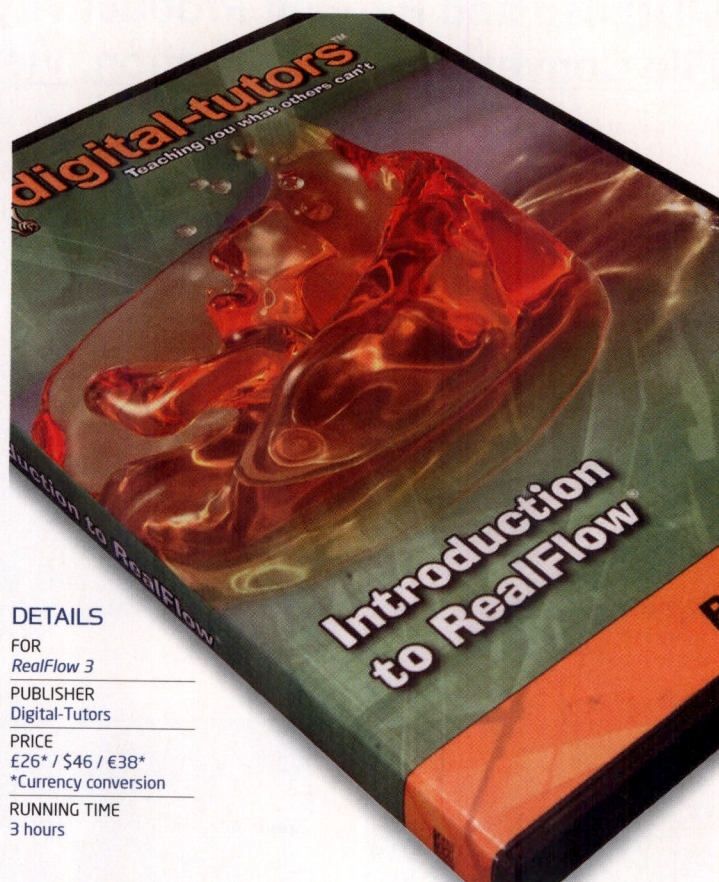
point of view – but then, they don't really need to be, as they convey the relevant information.

For the price, the book should really have been printed in colour, especially when dealing with materials and modelling with 'busy' blueprint images in the background. However, everything is well structured, as you would expect from Ted Boardman.

## VERDICT

Well constructed and informative, with a natural progression through *3ds Max 7*'s features

9



## DETAILS

FOR  
*RealFlow 3*  
PUBLISHER  
Digital-Tutors  
PRICE  
£26\* / \$46 / €38\*  
\*Currency conversion  
RUNNING TIME  
3 hours

## Introduction to RealFlow

**A**s a standalone fluid dynamics simulator, *RealFlow 3* is a tricky beast to get to grips with. It's a convoluted application with far too many options and menus for its own good, which is why any help you can get with it is useful.

Digital-Tutors' two-disc *RF3* pack aims to ease you gently into the program; to show you how to create some basic fluid simulations and then provide a grounding in some of the more advanced effects you can achieve.

And as an introduction to the application, it works well. Despite the built-in help files, *RF3* has so many variables (speed, viscosity, resolution, scale, density, relaxation ... we could go on), that experimentation is like herding cats. Even the most basic of tips can prove really valuable in reducing your tweaking time.

After the usual pouring-water-into-a-cup sim stuff on CD 1, CD 2 goes on to explore *RF3*'s elastics, hard-body dynamics and its RealWave ocean generator. Here, it touches on areas that most users might not have even toyed with, but it's all just a little

bit lightweight and often only scratches the surface, leaving you to experiment on your own. For example, it explains how to set up an interesting elastics simulation, but proffers no advice on how to make it look more like cloth and less like a sheet of very thin blanchmange.

The commentary is a little clumsy, where values are often misread ('nought-point-one' for 0.01), and the narrator has a propensity to say "probably definitely" and "pretty much", which adds a slight vagueness to it all – as if Digital-Tutors is not entirely certain of its own advice.

If this pack was just a little bit longer and more thorough, it would have been invaluable. As it stands, it's still a worthy teaching aid, but you would be advised to scour the Internet and Next Limit's own website for free tutorials and videos to solve any immediate problems, before handing over the best part of £30.

## VERDICT

Includes useful tips, but they've left enough for an 'advanced' version in the future

6





**PolyTrans**  
and NuGraf

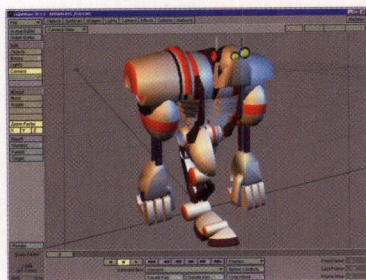
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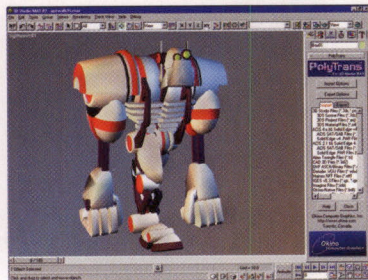
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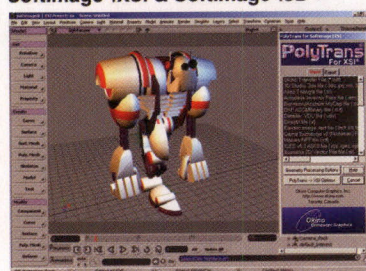


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(original model)

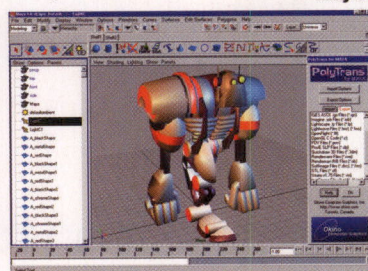


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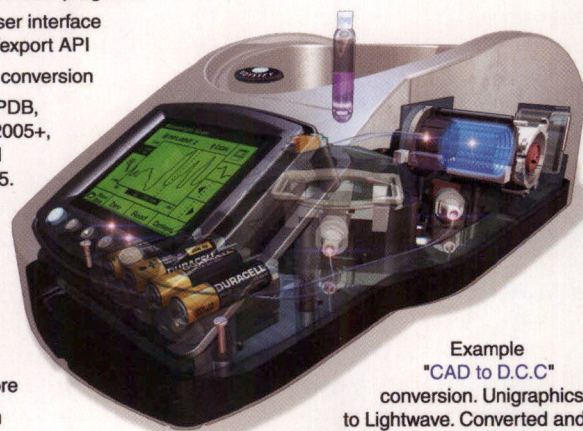
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- NuGraf only: Caustics, an amazing lens flare system & sunlight calculator



Example  
"CAD to D.C.C"  
conversion. Unigraphics  
to Lightwave. Converted and  
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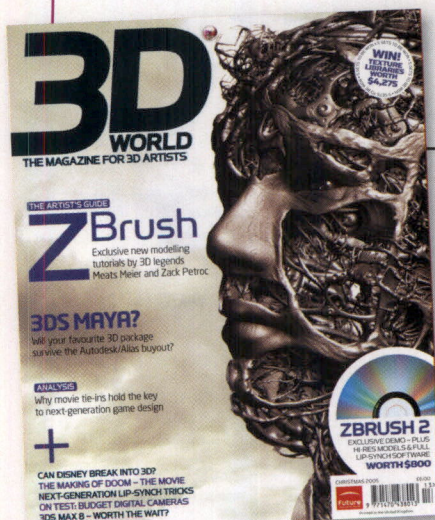
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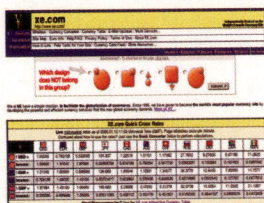
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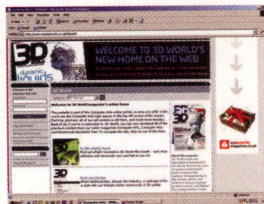
# Buyer's guide

Whether you want advice on choosing a specific software package, or an overview of what's on the market, this database of past 3D World reviews contains the information you need to make the right buying decision

## Online Resources



● This guide lists prices in Pounds Sterling and US Dollars. For a quick currency conversion: [www.xe.com](http://www.xe.com)



● For non-3D software, our new online portal holds a wide range of reviews: [www.3dworldmag.com](http://www.3dworldmag.com)



When new 3D users contact the magazine, the most common question they ask is: "Which software package should I buy?" To which the honest response is: "That really depends on you."

Unlike Web design or 2D illustration, there's no single, well-established software package that all professionals use. Instead, choosing a 3D application is largely a matter of personal requirements, not to mention individual taste. Before you begin downloading demos, however, it does help to have a broad overview of what's available – and that's where this buyers' guide comes in.

In this guide, you'll find a list of the key software packages in a particular market sector, the issue of the magazine in which each one featured and a brief summary of the review. These summaries represent a single reviewer's opinion, but they should give you an idea of the key characteristics of each application.

## QUESTIONS, QUESTIONS...

Before diving in, there are two fundamental questions you should ask. Firstly, are you pursuing 3D as a professional career? And secondly, what kind of 3D work do you aim to produce?

If the answer to the first question is 'no', the only limitations on your choice of 3D software are your budget and operating system. In the hands of a skilled user, inexpensive applications can generate impressive results, although they might not do so as quickly as more expensive software (or in a way that professional 3D artists would deem conventional).

If you do aim to make a living in 3D, however, you'd be well advised to pick a 'professional' application: those listed in the upper table on the page opposite. Expensive packages don't necessarily generate better results, but they tend to produce work quickly,

flexibly and reliably – all important issues if deadlines are looming. And while studios don't usually hire staff solely on the basis of the software they've used, mastering a 'name' application will familiarise you with high-end tools and increase your chances of freelance work.

Another consideration is whether you intend to produce animations or still images. As a crude generalisation, illustrators and graphic artists often favour pro applications at the lower end of the price scale, while those working in animation, visual effects or game design tend to opt for more expensive packages.

Ultimately, however, there's no substitute for hands-on experience. All major applications have demo versions that you can

## CHOOSING APPLICATIONS IS ALL ABOUT PERSONAL REQUIREMENTS AND INDIVIDUAL TASTE

download and experiment with, and before you reject the more expensive packages, remember that many of them – particularly *Maya*, *Houdini*, *LightWave* and *Softimage XSI* – have free 'learning' editions. Educational deals also offer students the chance to buy full versions of professional software for the price of a handful of DVDs: to see if you qualify, check the website of the software package you're interested in.

Fortunately, there are very few 'bad' 3D packages on the market, so choosing the right one for you ultimately comes down to personal taste. Do your research, consult the magazine, and be prepared to experiment – but above all, enjoy yourself!

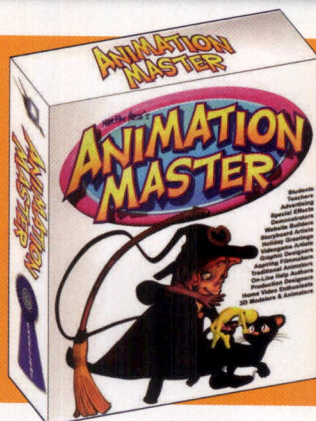
## ALL-ROUND 3D PACKAGES (UNDER £250)

PRODUCT	FORMAT	DESCRIPTION	PRICE	DEVELOPER	WEBSITE	ISSUE	VERDICT	SCORE
AIST MOVIE 3D	PC	Cut-down version of <i>Realsoft 3D</i> , aimed mainly at home movie makers dabbling in 3D	£68* (\$132*)	AIST	<a href="http://www.aist.com">www.aist.com</a>	N/A	[Not previously reviewed in <i>3D World</i> ]	N/A
CARRARA 3D BASICS 2	Mac/PC	Extremely stripped-down version of a mid-price app, aimed at hobbyists and casual users	£69 (\$99)	Eovia	<a href="http://www.eovia.com">www.eovia.com</a>	N/A	[Not previously reviewed in <i>3D World</i> ]	N/A
CARRARA 4 STANDARD	Mac/PC	Inexpensive all-rounder, lacking some of the high-end tools from <i>Carrara 4 Professional</i>	£209 (\$279)	Eovia	<a href="http://www.eovia.com">www.eovia.com</a>	60	Still a solid purchase for a novice all-round 3D user on a budget, <i>Carrara 4</i> fixes bugs from earlier versions, but lacks the new rendering tools of the <i>Pro</i> edition	8
GAMESPACE	PC	Cut-down <i>trueSpace</i> with extra games tools: aimed at modders and indie game developers	£154* (\$299)	Caligari	<a href="http://www.caligari.com/gamespace">www.caligari.com/gamespace</a>	46	Goes some way to providing a one-stop solution for the mod community, but one with rough edges on release: those on a real budget may stick to freeware	7
HASH ANIMATION:MASTER	Mac/PC	Cult entry-price animation app: chosen by many leading animators for personal work	£154* (\$299)	Hash Inc.	<a href="http://www.hash.com">www.hash.com</a>	59	Powerful, intuitive rigging and animation package, complemented by a simple, versatile modeller. Now adds hair support and a sprite-based particle system	9
PIXELS 3D 5	Mac	The premier – and possibly sole – Mac-only 3D package: a cult app amongst Mac fans	£77* (\$149)	Pixels Digital	<a href="http://www.pixelsdigital.com">www.pixelsdigital.com</a>	42	Great value for money, and includes a number of high-end tools, including fluids and cloth. Good render quality, but very slow, and workflow could be improved	8
REALSOFT 3D 5 (FOR LINUX)	Linux	Even better value than the PC edition: most Linux users' main alternative to freeware	£136* (\$245*)	Realsoft Graphics	<a href="http://www.realsoft.com">www.realsoft.com</a>	35	[Reviewed at version 4] Excellent render quality, but more suited to still images than animation, particularly character animation. OpenGL could be improved	9
SHADE 7 DESIGNER LE	Mac/PC	Very inexpensive, if limited, all-round package: extremely popular with hobbyists in Japan	£56* (\$109)	Curious Labs	<a href="http://www.curiouslabs.com">www.curiouslabs.com</a>	58	Clearly geared towards the student or amateur, this cheap and cheerful version of its bigger siblings shares the basic modelling tools but is otherwise limited	7
SHADE 7 STANDARD	Mac/PC	Mid-level edition: more expensive than LE, but lacks some key tools of <i>Shade 7 Pro</i>	£107* (\$209)	Curious Labs	<a href="http://www.curiouslabs.com">www.curiouslabs.com</a>	58	Similar in toolset to the <i>Professional</i> edition, but lacks automatic smoothing and interpolation. A reasonable buy, if you can handle the translation issues!	7



## ALL-ROUND 3D PACKAGES (OVER £250)

PRODUCT	FORMAT	DESCRIPTION	PRICE	DEVELOPER	WEBSITE	ISSUE	VERDICT	SCORE
3DS MAX 7.5	PC	Long-established 3D package: still a standard in the games and architecture industries	£2,695 (\$3,495)	Autodesk	<a href="http://www.autodesk.com">www.autodesk.com</a>	66	A solid half-point release – although only available to subscribers – 3ds Max 7.5 adds hair and fur, architectural features and better mental ray rendering	8
CARRARA 4 PRO	Mac/PC	Inexpensive all-round app, now targeted more specifically at professional illustrators	£419 (\$579)	Eovia	<a href="http://www.eovia.com">www.eovia.com</a>	60	Retains Eovia's unique – and possibly offputting – system of workflow divided into 'rooms', but dramatically improves animation and high-end rendering	8
CINEMA 4D 9.5	Mac/PC	Entry-level edition only; some important tools must be purchased as add-on modules	£499 (\$695)	Maxon	<a href="http://www.maxon.net">www.maxon.net</a>	71	This upgrade from version 9 contains more than 80 enhancements, including a massive speed boost, overhauled content browser and new Sky shader	8
CINEMA 4D 9.5 XL	Mac/PC	A powerful renderer makes this increasingly respected app the choice of many illustrators	£1,399 (\$1,995)	Maxon	<a href="http://www.maxon.net">www.maxon.net</a>	71	[This edition not specifically reviewed in 3D World] Pricier than LightWave, but the MOCCA and Advanced Render modules are essential to many pro artists	8
CINEMA 4D 9.5 STUDIO	Mac/PC	Top-level edition of Cinema 4D, adding in BodyPaint 2 and unlimited network rendering	£2,199 (\$2,995)	Maxon	<a href="http://www.maxon.net">www.maxon.net</a>	71	[This edition not specifically reviewed in 3D World] Primarily for large facilities needing unlimited render licenses, although BodyPaint is a useful added extra	8
EIAS 6	Mac/PC	16-year-old animation package; a workhorse in the film and broadcast graphics industries	£514* (\$695)	Ei Technology Group	<a href="http://www.eitechnologygroup.com">www.eitechnologygroup.com</a>	70	Its strong cult following will appreciate the latest upgrade, but EIAS is now definitely looking a bit pricey. No built-in modeller, but comes with Silo 1.4.	7
HOUDINI 7 MASTER	PC/Linux	Powerful procedural animation package: few skilled users, but a staple of much VFX work	£8,769* (\$17,000)	Side Effects Software	<a href="http://www.sidefx.com">www.sidefx.com</a>	41	[Reviewed at version 6] Retains all the power of previous versions, but makes considerable advances in terms of ease of use. Also adds GI rendering	8
LIGHTWAVE 3D 8	Mac/PC	Another long-established package, used in a wide range of work, notably TV effects	£440* (\$595)	NewTek	<a href="http://www.newtek.com">www.newtek.com</a>	53	Vastly improves character animation and dynamics, and streamlines workflow, but leaves the renderer and underlying structural problems of the app untouched	8
MAYA 7 COMPLETE	Mac/PC/Linux	An affordably priced edition of Maya for many 3D markets – and far meatier than version 6.5	£1,449 (\$1,999)	Alias	<a href="http://www.alias.com">www.alias.com</a>	70	Alias has listened to users' requests with this version, and Maya 7 Complete in particular raises its game with polygon updates, a new Toon Shader and more	9
MAYA 7 UNLIMITED	Mac/PC/Linux	Powerful all-rounder, a favourite for film effects work – and its toolset just got better	£4,899 (\$6,999)	Alias	<a href="http://www.alias.com">www.alias.com</a>	70	A massive, games-oriented upgrade that will also please TV and film users, with enhancements to Fur and Hair dynamics, plus the Cloth and Live toolset	9
MOTIONBUILDER 7 PRO	Mac/PC	Previously Kaydara's, Alias bought this mighty animation package just over a year ago	£2,725 (\$4,195)	Alias	<a href="http://www.alias.com">www.alias.com</a>	71	The second full-point upgrade in a year fixes many shortcomings of version 6. A pleasure to animate with, great new Character Extensions, but still expensive	8
REALSOFT 3D 5 (FOR PC)	PC	Underpublicised, but well-regarded, mid-priced application: good built-in renderer	£415* (\$795*)	Realsoft Graphics	<a href="http://www.realsoft.com">www.realsoft.com</a>	61	Enhanced Sub-D modelling and texturing make this a viable alternative to better-known 3D illustration apps. Still weak at character animation, however	9
SHADE 7 PRO	Mac/PC	Very popular Japanese package. Still relatively unknown in the West, but may gain ground	£521* (\$1,009)	Curious Labs	<a href="http://www.curiouslabs.com">www.curiouslabs.com</a>	58	Robust modelling tools and a reasonably powerful renderer, but the interface and animation tools will seem unconventional to many Western 3D artists	7
SOFTIMAGE XSI 5 FOUNDATION	PC/Linux	Aggressively marketed entry-level edition of a leading 3D app: very powerful for the price	£299 (\$495)	Softimage	<a href="http://www.softimage.com">www.softimage.com</a>	70	Fuller-featured than many entry-level editions of major packages, Foundation – originally sold for \$1,995 – sets a new benchmark for 3D software pricing	9
SOFTIMAGE XSI 5 ESSENTIALS	PC/Linux	Powerful, well-balanced all-round package whose lower price represents better value	£1,125 (\$1,995)	Softimage	<a href="http://www.softimage.com">www.softimage.com</a>	70	Powerful upgrade. Handles 64-bit, loads of data (thanks to its gleapolygon architecture) and boasts a fast, state-of-the-art physics simulation engine	9
SOFTIMAGE XSI 5 ADVANCED	PC/Linux	Widely used in games and VFX, but struggles for market dominance with 3ds Max and Maya	£3,950 (\$6,995)	Softimage	<a href="http://www.softimage.com">www.softimage.com</a>	70	XSI 5 Advanced is for power users. Includes the Behavior 2.1 crowd animation system, SyFlex 3 cloth and flesh simulator, plus extra satellite render licences	9
STRATA 3D CX	Mac/PC	Long-established, if relatively niche, mid-price 3D package: now targeted at illustrators	£346* (\$695)	Strata	<a href="http://www.strata.com">www.strata.com</a>	55	A capable, if idiosyncratic, package for a print graphic artist looking to team Photoshop and Illustrator with a little 3D. Far weaker for animation, however	7



## TALKING POINT | Hash – stubbornly independent

**ANIMATION:MASTER** IS THAT rarest of all beasts: a commercial 3D program that refuses to play by the rules of the major developers. Originally released in the early 1990s, and rapidly gaining a following among animators unable to afford the then insanely priced high-end packages, the software has racked up a number of major indie hits – notably future Pixar animator

Victor Navone's *Alien Song*. Despite developer Hash Inc's policy of neither advertising in, nor soliciting reviews from, the animation press, *Animation:Master* retains its cult appeal to this day. But as the competition tumbles in price, has the 'animation software that even an artist can afford' responded to new market conditions? ***Animation:Master* is reviewed on page 86**

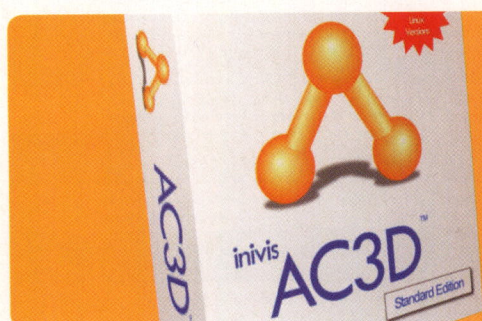
## TEXTURING

PRODUCT	FORMAT	DESCRIPTION	PRICE	DEVELOPER	WEBSITE	ISSUE	VERDICT	SCORE
BODYPAIN 3D 2	Mac/PC	Powerful specialist 3D painting package, used on increasingly high-profile VFX projects	£425 (\$745)	Maxon	<a href="http://www.maxon.net">www.maxon.net</a>	47	Much quicker and simpler to use than the first release, and results can be stunning. Rock solid and well documented, but one for specialist texture artists	9
GENETICA 2 PRO	PC	Create an infinite variety of seamlessly tileable textures with minimal effort	£228 (\$399)	Spiral Graphics	<a href="http://www.spiralgraphics.biz">www.spiralgraphics.biz</a>	69	An asset for busy professionals, <i>Genetica 2</i> is a versatile and easy-to-use application. You can also create bump maps, although not animated textures	8
PAINT SHOP PRO 9	PC	Inexpensive 2D painting and bitmap editing app, unfairly regarded as 'just for hobbyists'	£99.95 (\$129)	Corel	<a href="http://www.corel.com">www.corel.com</a>	57	Fantastic value for money, and version 9 adds a proper History palette. Does nearly anything that <i>Photoshop</i> can, but needs better alpha channel support	9
PHOTOSHOP CS2	Mac/PC	The <i>de facto</i> standard for texture painting and image manipulation amongst CG artists	£523 (\$599)	Adobe	<a href="http://www.adobe.com">www.adobe.com</a>	68	Still <i>de rigueur</i> for pro 3D work, with enough enhancements – such as support for HDR images and the Smart Objects feature – to make this the best version	9



## MODELLING

PRODUCT	FORMAT	DESCRIPTION	PRICE	DEVELOPER	WEBSITE	ISSUE	VERDICT	SCORE
AMAPI DESIGNER 7	Mac/PC	Long-established modelling package, boasting a unique workflow and interface	£339 (\$479)	Eovia	<a href="http://www.eovia.com">www.eovia.com</a>	40	A powerful modelling package, particularly for organic objects, although users will either love or loathe the interface, and documentation could be improved	9
AMAPI 7.5 PRO	Mac/PC	Amapi Designer's new bigger sibling, intended as a serious alternative to pricier applications	£559 (\$779)	Eovia	<a href="http://www.eovia.com">www.eovia.com</a>	62	Professional version of Amapi, aimed at industrial modelling. Superb Dynamic Geometry and better NURBS modelling but tool/command validation is tricky	9
FORM+Z 5	Mac/PC	Powerful, long-established all-round modeller, used on a wide range of industrial projects	£794* (\$1,495)	Auto+des+sys	<a href="http://www.formz.com">www.formz.com</a>	63	This is a premium modelling package – a hybrid solid and surface modeller. With strong NURBS tools and decent renderer, it has a steep learning curve	8
HEXAGON	Mac/PC	Eovia's new modeller is a sound entry-level tool for the Poser/Vue/Bryce crowd	£142 (\$249)	Eovia	<a href="http://www.eovia.com">www.eovia.com</a>	67	With polys, splines and sub-Ds, this low-end modeller sports a better toolset than you'd expect for the price – we await a more bug-free version 2	8
MOD0	Mac/PC	Powerful, customisable and Mac-friendly new Sub-D modeller, created by ex-NewTek staff	£359* (\$695)	Luxology	<a href="http://www.luxology.com">www.luxology.com</a>	60	A relatively pricey addition to a crowded market sector, but one with a uniquely customisable modular design. Some early stability issues, but improving rapidly	8
SKETCHUP 5	Mac/PC	Architectural modeller that's fast and fun to use, with a unique sketching workflow	£315 (\$570*)	@Last Software	<a href="http://www.sketchup.com">www.sketchup.com</a>	70	Sketching package, architectural tool and 3D modeller, rolled into one affordable tool. Great new 3D terrain toolset and layer manager, but no standard lights	8
SOLIDTHINKING DESIGN 6.5	Mac/PC	A thankfully uncomplicated NURBS modelling tool for professional 3D artists	£1,579* (\$2,745)	solidThinking Ltd	<a href="http://www.solidthinking.com">www.solidthinking.com</a>	69	A somewhat expensive, though outstanding, NURBS modeller that has the shallowest of learning curves for absolute beginners	9
TURBOCAD PRO 11	PC	A well-priced CAD powerhouse that has been battling industry leader AutoCAD for years	£414* (\$749)	IMS, Inc	<a href="http://www.turbocad.com">www.turbocad.com</a>	71	This popular tool gets better NURBS functionality, a host of architectural tools and a faster modelling engine. Comprehensive and great value for money	9
ZBRUSH 2	Mac/PC	Powerful, intuitive organic modelling package currently gaining very strong word of mouth	£252* (\$489)	Pixologic	<a href="http://www.zbrush.com">www.zbrush.com</a>	53	A new interface helps redefine ZBrush 2 as a professional 3D sculpting tool. Still some quirks, but many unique tools and capable of handling millions of polys	9



### TALKING POINT | Sub-Ds for under \$60

FOR REASONS OF SPACE, the 3D World Buyer's Guide prioritises those software packages that have received full reviews within the magazine. However, there are a number of other established applications currently available. One example is the inexpensive polygonal/subdivision surface

modeller AC3D, now on its fifth full-point release. Available for Windows, Mac and Linux from Invis Limited for just \$59.95, the software is in use at clients including Nasa and Volkswagen. For more information about AC3D 5, visit the website below. [www.ac3d.org](http://www.ac3d.org).

## CHARACTER AND FACIAL ANIMATION

PRODUCT	FORMAT	DESCRIPTION	PRICE	DEVELOPER	WEBSITE	ISSUE	VERDICT	SCORE
DAZ STUDIO	Mac/PC	Long-awaited new rival to Poser, currently still available as a free public beta	Free	DAZ Productions	<a href="http://www.daz3d.com">www.daz3d.com</a>	N/A	[Not previously reviewed in 3D World]	N/A
ENDORPHIN 2	PC	Innovative motion synthesis system using AI actors' to generate artificial mo-cap data	£7,995 (\$12,795)	NaturalMotion	<a href="http://www.naturalmotion.com">www.naturalmotion.com</a>	67	Brilliant, technically accomplished, and fun to use, to boot. Generates data no real-world stuntman could achieve. Uses unique AI-powered virtual stuntmen	9
FACESTATION 2	PC	Turn video footage of an actor's face into instant animation: for 3ds Max and Maya	£1,041* (\$1,995)	Digimation	<a href="http://www.digimation.com">www.digimation.com</a>	33	Fast facial tracking, and can work with real-time capture. Resource hungry, however, and the quality of the results is only as good as your morph targets	8
LIFESTUDIO:HEAD 2.5 STANDARD EDITOR	PC	Customise a pre-built head model, apply instant lip synch and export as OBJs or an AVI	£310 (\$599*)	LifeMode Interactive	<a href="http://www.lifemi.com">www.lifemi.com</a>	44	Good texturing tools, but some tweaking is required to finesse the lip synch generated automatically from an audio track. Manual and UI need tidying up	8
LIFESTUDIO:HEAD 2.5 PRO ARTIST	PC	Create and rig facial models for 3ds Max and Maya, then apply instant lip-synching	£990 (\$1,914*)	LifeMode Interactive	<a href="http://www.lifemi.com">www.lifemi.com</a>	44	As the Standard Editor, but with the power to import/export directly to Maya or 3ds Max. One of the first proper tools of this kind: a time-saver for games artists	8
MESSIAH:ANIMATE 5	PC	Powerful standalone animation package, also available as a plug-in for major 3D packages	£125* (\$239)	pmG Worldwide	<a href="http://www.projectmessiah.com">www.projectmessiah.com</a>	29	[Reviewed at version 3] A comprehensive character animation solution with very fast IK and deformation and powerful expressions. Now reduced in price	8
MESSIAH:STUDIO 2	PC	messiah:animate's larger parent product, adding in full rendering capabilities	£518* (\$995)	pmG Worldwide	<a href="http://www.projectmessiah.com">www.projectmessiah.com</a>	58	Not an industry-standard application (and lacks modeling tools), but offers intuitive, fast and powerful GI rendering and is capable of some amazing results	7
POSER 6	Mac/PC	The original figure-posing application, also used for pre-viz and simple animation work	£157 (\$249)	Curious Labs	<a href="http://www.curiouslabs.com">www.curiouslabs.com</a>	65	Despite a few niggles, well-chosen workflow enhancements and a lot of new content make Poser 6 a vital upgrade. Still undisputed champ in its market sector	8

## RENDERING (packages previously reviewed in 3D World only)

PRODUCT	FORMAT	DESCRIPTION	PRICE	DEVELOPER	WEBSITE	ISSUE	VERDICT	SCORE
ARTLANTIS R	Mac/PC	Affordable renderer built on Artlantis, aimed at the architectural visualisation market	£345 (\$595)	Abvent	<a href="http://www.abvent.com">www.abvent.com</a>	70	Fast, value-for-money tool offering one-click radiosity. Users switching from Artlantis 4.5 lose animation controls – soon to be available in Artlantis Studio	8
FINAL RENDER STAGE-1	PC	Another powerful 3ds Max renderer, often used in architectural visualisation work	£415* (\$795)	Cebas	<a href="http://www.finalrender.com">www.finalrender.com</a>	43	Powerful new HyperGI engine and caustics tools, but exceptional results require a lot of tweaking. Some instabilities, particularly in distributed renders	7
RENDERMAN FOR MAYA	Mac/PC	Pixar's new, fully integrated renderer for Maya, targeted primarily at smaller studios	£550* (\$995)	Pixar	<a href="https://renderman.pixar.com">https://renderman.pixar.com</a>	70	Only runs on one processor, but it's stunning, up to 10 times faster than Mental Ray, fairly inexpensive and it rocks with particles – a must-have plug-in	9
TURTLE	Mac/PC/ Linux	Third-party Maya renderer, designed to offer a new balance of speed and image quality	£619* (\$1,199)	illuminate Labs	<a href="http://www.illuminate-labs.com">www.illuminate-labs.com</a>	55	Blisteringly fast raytrace rendering. Currently best suited to architectural work, due to lack of support for particles and Paint Effects, but developing rapidly	7



## LANDSCAPE GENERATION

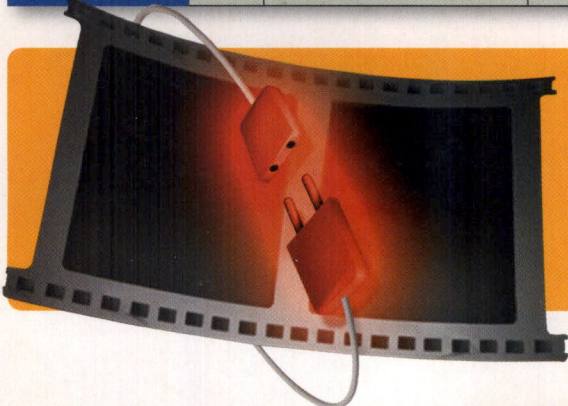
PRODUCT	FORMAT	DESCRIPTION	PRICE	DEVELOPER	WEBSITE	ISSUE	VERDICT	SCORE
<b>BRYCE 5.5</b>	Mac/PC	The original landscape generator: now back in development after several years in limbo	£70* (\$110)	DAZ Productions	bryce.daz3d.com	68	Not the most powerful app on the market, but a very affordable one. <i>Bryce</i> is easy to use, and 5.5 offers faster rendering and extended OpenGL support	9
<b>MOJOWORLD 3</b>	Mac/PC	Unusual landscape-generation app with a unique emphasis on creating entire planets	£103* (\$199)	Pandromeda	www.pandromeda.com	60	A unique approach to landscape generation that tends to polarise opinion. Great tools, but hard to control fine details and the interface can be frustrating	6
<b>VUE 5 ESPRIT</b>	Mac/PC	Landscape generation's current market leader: high-quality results at an affordable price	£171 (\$249)	e-on Software	www.e-onsoftware.com	59	Rightly the best-selling landscape generator: very realistic results, and easy to master. New GI rendering is slow, however, and still no proper animated water	9
<b>VUE 5 PRO STUDIO</b>	Mac/PC	The <i>Vue 5 Esprit</i> core, augmented by four add-on modules (also purchasable separately)	£274 (\$399)	e-on Software	www.e-onsoftware.com	65	A well-rounded set of add-ons. Although some features should arguably be in the core app, <i>Mover</i> (Poser import) and <i>Botanica</i> (plant editing) are of real value	8
<b>VUE 5 INFINITE</b>	Mac/PC	Pro-level edition of <i>Vue</i> , aimed at architectural and VFX work. Formerly known as <i>Vue 4 Pro</i>	£411 (\$599)	e-on Software	www.e-onsoftware.com	66	Powerful, intuitive and configurable, <i>Vue 5 Infinite</i> leads where other landscape apps dare not follow. Relatively pricey, but capable of incredible-quality results	8
<b>WORLD CONSTRUCTION SET 6</b>	Mac/PC	Technical, but very powerful, package: well suited to tasks requiring real-world accuracy	£258* (\$500)	3D Nature	www.3dnature.com	13	[Reviewed at version 5] A versatile and comprehensive landscape program, but the interface is unintuitive with a steep learning curve and no simple mode	8
<b>WORLDBUILDER GENESIS</b>	PC	A popular alternative to the <i>Vue</i> family: more powerful than <i>Bryce</i> , less technical than <i>WCS</i>	£92* (\$179)	Digital Element	www.digi-element.com	57	Beautiful end results, and fairly easy to use. Now very much optimised for <i>3ds Max</i> , though, while some of the new features and the tutorials lack polish	7
<b>WORLDBUILDER PRO 4</b>	PC	Higher-end edition of <i>WorldBuilder</i> , tailored to pro graphics artists rather than hobbyists	£360* (\$699)	Digital Element	www.digi-element.com	57	A terrific program with many unique features, particularly for plant and water animation, and great user control over fine detail – but see reservations above	7

## COMPOSITING

PRODUCT	FORMAT	DESCRIPTION	PRICE	DEVELOPER	WEBSITE	ISSUE	VERDICT	SCORE
<b>AFTER EFFECTS 6 STANDARD</b>	Mac/PC	One of the most popular desktop compositing packages, usable even for broadcast work	£565 (\$699)	Adobe	www.adobe.com	47	Updated video painting features, plus the addition of <i>Photoshop's</i> Liquefy tool make for a major upgrade. Still the same cluttered old interface, however	8
<b>AFTER EFFECTS 6 PROFESSIONAL</b>	Mac/PC	As <i>After Effects Standard</i> , plus some high-end tools: worth investing in for professional work	£915 (\$999)	Adobe	www.adobe.com	47	Motion tracking, enhanced keying and masking, particle systems and 16-bit colour space tools make this a better option than <i>AE Standard</i> for serious work	8
<b>COMBUSTION 4</b>	Mac/PC	Autodesk's own desktop compositor: unsurprisingly often teamed with <i>3ds Max</i>	£850 (\$995)	Autodesk	www.autodesk.com	65	Very strong basic tools, well-organised workflow and good compatibility with 3D apps, but poorer editing app integration and a relatively steep learning curve	9
<b>DFX+ 4</b>	PC	Cut-down, modular version of <i>Digital Fusion</i> , much beloved of PC-based <i>LightWave</i> artists	Priced by module	eyegon Software	www.eyegon.com	43	Most of the improvements in version 4 are cosmetic, but still a powerful, affordable, node-based compositing app. Good visual effects and 3D tools	8
<b>DIGITAL FUSION 4</b>	PC	One of the first PC-based desktop compositing packages, but still relatively little known	£2,579* (\$4,995)	eyegon Software	www.eyegon.com	43	Not limited to 8-bit colour space, unlike <i>DFX+</i> , making this a powerful – and underrated – PC-based compositor, capable of scaling to film-quality work	8
<b>SHAKE 3.5</b>	Mac/Linux	Powerful node-based desktop compositor, used even in film and broadcast effects	£2,099 (\$2,999)	Apple	www.apple.com	54	The most powerful desktop compositor on the market, with the possible exception of <i>Digital Fusion</i> . Version 3.5 adds long-awaited morphing tools	8

## CAMERA TRACKING AND MATCH MOVING

PRODUCT	FORMAT	DESCRIPTION	PRICE	DEVELOPER	WEBSITE	ISSUE	VERDICT	SCORE
<b>3D-EQUALIZER 3</b>	Mac/Linux	Venerable (and Oscar-winning) tracking package, still widely used in film effects	On request	Science-D-Visions	www.3dequalizer.com	N/A	[Not previously reviewed in <i>3D World</i> ]	N/A
<b>BOUJOU 3</b>	Mac/PC/ Linux	One of the first major alternatives to <i>3D-Equalizer</i> , popular in the effects world	£5,190* (\$10,000)	2d3	www.2d3.com	64	Version 3 is still a powerful tracking package, but this much-delayed and largely unsurprising update may prove a disappointment to long-term <i>boujou</i> users	6
<b>BOUJOU BULLET</b>	Mac/PC/ Linux	Cut-down, wizard-driven version of <i>boujou</i> , intended for small to medium-sized facilities	£1,307* (\$2,500)	2d3	www.2d3.com	64	Aimed at smaller post facilities, <i>bullet</i> has good basic 2D and 3D tracking and accepts any resolution footage, but can prove unreliable with zoom shots	7
<b>MATCHMOVER PRO 3.1</b>	Mac/PC/ Linux	Another of the old guard of desktop tracking applications, recently reduced greatly in price	£2,062* (\$3,500)	Realviz	www.realviz.com	63	A highly evolved version of the software, with powerful 2D and 3D tracking tools. No optical flow facility, however, and the mo-cap module costs a lot extra	7
<b>PFHOE</b>	Mac/PC	A powerful low-cost DV tracking application, named by <i>3D World</i> readers (see issue 61)	£49 (\$94*)	The Pixel Farm	www.thepixelfarm.co.uk	62	With fast and robust auto-tracking, <i>PFHoe</i> is great value for money and ideal for its target audience of aspiring digital filmmakers and independent artists	9
<b>PFMATCH</b>	Mac/PC	<i>PFTrack's</i> younger sibling, offering a useful range of tracking tools at an entry-level price	£600 (\$1,160)	The Pixel Farm	www.thepixelfarm.co.uk	57	Great price, although only broadcast-resolution footage in AVI and QT formats is supported. Good user control in version 1.5, but no proxy-resolution tracking	8
<b>PFTRACK 3</b>	Mac/PC/ Linux	First of a new generation of lower-priced broadcast-quality camera tracking packages	£3,000 (\$5,000)	The Pixel Farm	www.thepixelfarm.co.uk	66	Fast, powerful, and now boasting true object tracking, <i>PFTrack 3</i> is arguably the most complete, and completely useful, tracking system currently available	9
<b>SYNTHETES</b>	Mac/PC	Astonishingly affordable new all-round tracking package, gaining good word of mouth	£180* (\$349)	Andersson Technologies LLC	www.ssontech.com	49	An incredible range of tools for the price. Outperforms costlier rivals on many tasks, but workflow can feel counter-intuitive for those used to other apps	9



## TALKING POINT | MatchMover for Maya

USED ON HIGH-PROFILE projects such as *Troy*, *MatchMover Pro* has a strong record in the camera-tracking market. With lower-priced products from The Pixel Farm and Andersson Technologies snapping at the

heels of the standalone program, Realviz has released new plug-in versions for *Maya* and *3ds Max*. But how does *MMTrack for Maya* fare against Alias' *Maya Live* technology? ***MMTrack for Maya* is reviewed on page 92**



## WEB 3D AND MULTIMEDIA

PRODUCT	FORMAT	DESCRIPTION	PRICE	DEVELOPER	WEBSITE	ISSUE	VERDICT	SCORE
ANARK STUDIO 3	PC	Established authoring package for interactive 3D presentations	£1,835* (\$3,499)	Anark	<a href="http://www.anark.com">www.anark.com</a>	64	A powerful solution for large-scale, real-time 3D, but the new higher price and absence of Mac support will leave some existing users high and dry	8
AXELEDGE 2	Mac/PC	All-in-one authoring and online animation package, described as 'like Flash in 3D'	£309* (\$595)	MindAvenue	<a href="http://www.mindavenue.com">www.mindavenue.com</a>	33	Powerful all-round authoring package, with good animation and interaction editing tools. Import and export options much improved in version 2.0	8
CULT3D	Varies	Free software suite for exporting 3ds Max and Maya models in interactive online format	Free	Cycore	<a href="http://www.cycore.com">www.cycore.com</a>	12	[Reviewed using the 3ds Max exporter] Relatively straightforward to use, with a good range of options in the exporter. Very much more stable in recent builds	7
DIRECTOR MX 2004	Mac/PC	De facto standard for authoring multimedia CDs/DVDs, now incorporating simple 3D tools	£809 (\$1,099)	Macromedia	<a href="http://www.macromedia.com">www.macromedia.com</a>	37	Greatly improved layout, but few new 3D tools since version 8.5. Havok physics and useful web output tools, but programming needed for complex effects	7
QUEST3D 2.1 ENTERPRISE	PC	Real-time 3D authoring tool, also available in cheaper Lite and Professional editions	£1,035* (\$1,999)	Act-3D	<a href="http://www.quest3d.com">www.quest3d.com</a>	48	Full-featured all-round authoring app, but fairly easy to master: no programming required. Can become unmanageably cluttered on complex projects, though	8
SWIFT 3D 4.5	Mac/PC	3D to vector graphics conversion tool: one of the most regularly updated interactive 3D apps	£128* (\$229)	Electric Rain	<a href="http://www.erain.com">www.erain.com</a>	68	Version 4.5 of this 3D-to-Flash application offers up to a 50-fold increase in render speed over version 4, plus a major overhaul of the vector render engine	8
WIREFUSION 4 ENTERPRISE	Mac/PC/Linux	Visual authoring tool for interactive 3D content, also available in cheaper editions	£1,195 (\$1,995)	Demicon	<a href="http://www.demicon.com">www.demicon.com</a>	56	Straightforward all-round authoring solution: no need for programming or specialist plug-ins to view output. Slightly unorthodox, but quick to master	8

## OTHER TOOLS

PRODUCT	FORMAT	DESCRIPTION	PRICE	DEVELOPER	WEBSITE	ISSUE	VERDICT	SCORE
3DSOM PRO	PC	Image-based modelling software for creating 3D models from multiple photographs	£1,495 (\$2,702*)	Creative Dimension Software	<a href="http://www.3dsom.com">www.3dsom.com</a>	70	Requires photos of an object against a marker grid, like <i>D Sculptor</i> or <i>iModeler</i> . Its first upgrade since 2003 offers great automasking and automatic texturing	7
ANTICS PRE-VIZ	PC	A new real-time pre-visualisation tool for production, with a simple learning curve	£570 (\$995)	Antics Technologies	<a href="http://www.antics3d.com">www.antics3d.com</a>	69	A solid, intuitive pre-production tool, simple enough for even producers to use! Advanced functionality is still slightly fiddly, but the supporting tutorials are good	8
D JOINER	PC	Photo-stitching software: less widely known than <i>Stitcher</i> , but suitable for many projects	£300 (\$575*)	D Vision Works	<a href="http://www.d-vw.com">www.d-vw.com</a>	20	In good hands, it does what it's meant to do. But it suffers from poor usability and a lack of automated features. Documentation is disappointingly slim too	7
D SCULPTOR 2 STANDARD	PC	Image-based modelling software: another mid-priced package, aimed at home users	£500 (\$960*)	D Vision Works	<a href="http://www.d-vw.com">www.d-vw.com</a>	11	[Reviewed at version 1] A good tool for creating 3D models from images, and cheaper than <i>ImageModeler</i> . Much slower and not as powerful, however	8
DEEP EXPLORATION 3.5	PC	File conversion software: capable of tackling a wide range of file formats, including CAD	£77* (\$149)	Right Hemisphere	<a href="http://www.righthemisphere.com">www.righthemisphere.com</a>	45	Well-designed model viewer, file conversion and asset management utility. Includes basic 3D model editing tools, rendering and Shockwave output	8
FRAMEFORGE 3D STUDIO	Mac/PC	Storyboarding software: first of a new wave of apps aimed at previz and 3D storyboarding	£180* (\$349)	Innoventive Software	<a href="http://www.frameforge3d.com">www.frameforge3d.com</a>	55	Extremely easy to use, and scales to even high-budget movies. Specialised props only available as add-on packs, though, and complex scenes can be sluggish	9
IMAGEMODELER 4	Mac/PC	Image-based modelling software: one of the earliest desktop photogrammetry packages	£712* (\$1,380)	Realviz	<a href="http://www.realviz.com">www.realviz.com</a>	59	Gives professional-quality results, and can cope with architectural-sized objects, but requires considerable user input. Quality also comes at a price	7
IMODELLER 3D 2.5 WEB	Mac/PC	Image-based modelling software: creates 3D models for online use, in a Java-based format	£70* (\$134*)	UZR	<a href="http://www.imodeler.com">www.imodeler.com</a>	58	Like the pro version but cheaper. With the right objects, this can produce quite impressive results. Wait until the release of version 3, which supports concavity	6
IMODELLER 3D 2.5 PRO	Mac/PC	Image-based modelling software: all-purpose app, exporting to a range of 3D file formats	£352* (\$675*)	UZR	<a href="http://www.imodeler.com">www.imodeler.com</a>	58	Impressive and more powerful than its main rival, <i>D Sculptor</i> , it has too many irritations. It may be easy to learn, but it's quirky and frustratingly unstable	6
NUGRAF 4.2	PC	File conversion software: powerful, with support for batch conversion and CAD data	£256* (\$495)	Okino	<a href="http://www.okino.com">www.okino.com</a>	21	[Reviewed at version 4] This affordable package performs a demanding task exceptionally well and is relatively affordable. User interface is a tad dated	8
PARTICLEILLUSION 3	Mac/PC	Particle software: generates 3D-style effects in 2D. Niche, but used on many pro projects	£206* (\$399)	Wondertouch	<a href="http://www.wondertouch.com">www.wondertouch.com</a>	41	A fast, flexible alternative to conventional 3D particle effects, and fits well into production pipelines. Would be improved by more specific forces and user control	8
REALFLOW 3	Mac/PC/Linux	Fluid simulation software: the current market leader for realistic fluids, used in film projects	£620* (\$1,200)	Next Limit	<a href="http://www.nextlimit.com">www.nextlimit.com</a>	60	Sets the benchmark for power and controllability for fluid-simulation systems, but at a price. Still some stability and UI issues, particularly in the Mac version	7
STITCHER 4	Mac/PC	Photo-stitching: the leader in its field, though similar tools are now present in <i>Photoshop</i>	£299* (\$580)	Realviz	<a href="http://www.realviz.com">www.realviz.com</a>	50	Incredibly powerful and versatile. Not a quick solution, but stands above the competition in quality of results, although that quality comes at a price	7
STORYVIZ	PC	Previsualisation software: the latest in a new wave of previz and storyboarding apps	£1,858* (\$3,600)	Realviz	<a href="http://www.realviz.com">www.realviz.com</a>	60	Far more flexible and open-ended than simple storyboarding apps, and includes a timeline and keyframe animation capabilities. A serious investment, however	8



## CONTACT US | Have we missed anything?

**THINGS CAN CHANGE** very quickly in the world of 3D software. If you've spotted an error in this buyer's guide, please contact us at the email address below. However, before writing in, please bear the following points in mind:

1. All prices exclude VAT and shipping, plus any optional extra costs, such as printed manuals or maintenance contracts.
2. Asterisks denote currency conversions from a list price at the current rate of exchange when the entry was added to the buyer's guide.

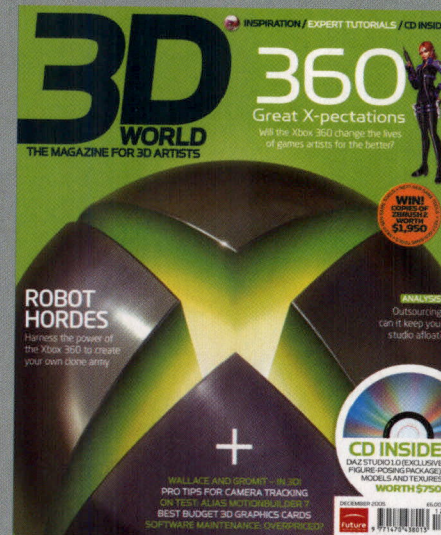
3. Due to limitations of space, not all sectors of the 3D market can be covered each issue. We aim to vary our listings from month to month.
4. Space also precludes us from listing the thousands of plug-ins currently available.
5. The verdict column contains a synopsis of our last published review. In most cases this will refer to the current version of the software. Where this is not so, it should be clearly noted.

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# BACK ISSUES

Missed an issue of 3D World? Contact our back issues department to see if there are any left!



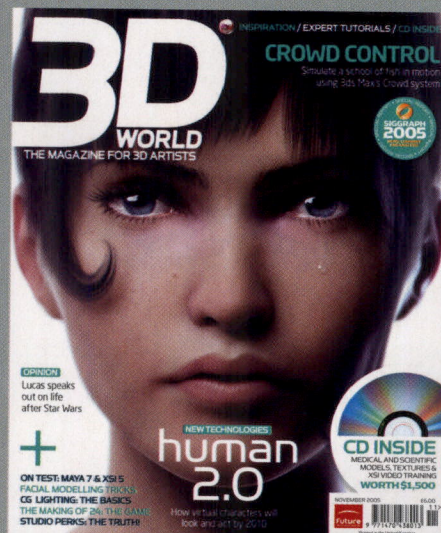
## ISSUE 71

**360: GREAT X-CEPTIONS**  
December 2005

How the Xbox 360 could change your life - and how to create robots for a next-gen game; Will outsourcing help your studio?; Pro tips for camera tracking

### ON THE DISC

DAZ Studio 1 (full app); models worth \$750; 100+ textures; Video tutorials



## ISSUE 70

**HUMAN 2.0**  
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The technology behind next-generation artificial life; George Lucas speaks out; Create a flocking simulation with 3ds Max; Maya 7 is reviewed

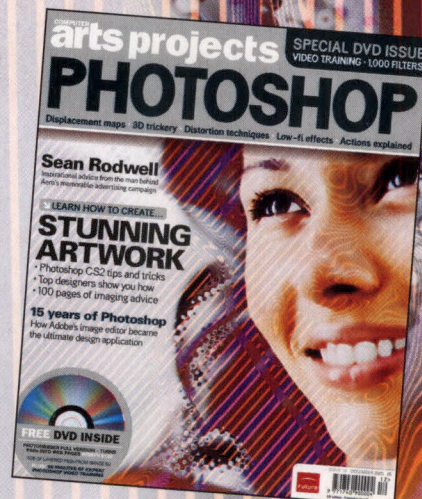
### ON THE DISC

Zygotec medical and scientific models; T-Splines (Learning Edition)



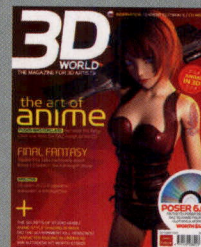
## IN THIS ISSUE:

- Discover the new tools and features in Photoshop CS2
- Learn how to save time and effort with actions
- Leading experts show you their techniques and tips
- PhotoWebber full product on the disc - turn your PSDs into web pages



**ISSUE 78**  
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THE IN-DEPTH GUIDE FOR DIGITAL CREATIVES

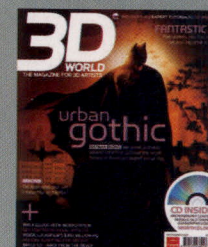


## ISSUE 69

**THE ART OF ANIME**  
October 2005

### ON THE DISC

Poser 6 demo, DAZ 3D anime figures worth \$120



## ISSUE 68

**URBAN GOTHIC**  
September 2005

### ON THE DISC

RPC content worth \$1,000, Silo training, endorphin 2 LE

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## studio profile



Information for artists seeking work at 3D studios. This month:  
**Streamline Studios**

### BASED

Purmerend, The Netherlands

### PREVIOUSLY WORKED ON

- Saint's Row (2005)
- Ghost Recon 2 (2004)

### HR CONTACT

Anethea Veenman, [aveenman@streamline-studios.com](mailto:aveenman@streamline-studios.com)

### URL

[www.streamline-studios.com](http://www.streamline-studios.com)

### TYPE OF WORK UNDERTAKEN

Creative and technical support services for the broadcast, film and videogames industries. As outsourcing specialists, the company's services cater to production teams that are understaffed, facing tight deadlines, or requiring specialised third-party assistance

### NUMBER OF FULL-TIME EMPLOYEES

10

### TYPICAL NUMBER OF FREELANCERS

47

### TYPICAL NUMBER OF RECRUITS PER YEAR

50

### LOOKING FOR USERS OF WHICH 3D SOFTWARE?

- 3ds Max
- Maya
- ZBrush
- Photoshop/Painter

### KEY SKILLS FOR EMPLOYEES

Potential candidates should have an ability to learn quickly in a pressurised environment. They must be proactive and demonstrate a 'can do' spirit that encourages their direct colleagues and the studio in general

### DESIRABLE SKILLS FOR EMPLOYEES

An understanding of the digital content creation process from conception to completion, including writing summaries, concept art, mood boards, storyboards, pre-production, production and postproduction

### A TYPICAL EMPLOYEE AT STREAMLINE IS...

Dedicated, accountable, proactive, confident, direct

### CURRENTLY HIRING FOR...

Technical artists, art directors, lead artists, animators, creative designers, level designers, real-time mesh artists, texture artists, programmers, project managers, producers, administrators, interns

### MAXIMUM LENGTH OF DEMO REELS

5 minutes

### PREFERRED FORMAT FOR DEMO REEL SUBMISSIONS

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24/7

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3DS Max  
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Compare Our Prices For Popular Compatible Inkjet Cartridges Below:

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BCI-24 Col	£1.75	TO26 Bk	£1.16	HP51649 Col	£11.74
BCI-3 Bk CMorY	£1.16	TO27 Col	£1.75	HP51645 Bk	£5.86
BCI-6 Bk CMorY	£1.16	TO36 Bk	£1.16	C6578 Col	£11.74
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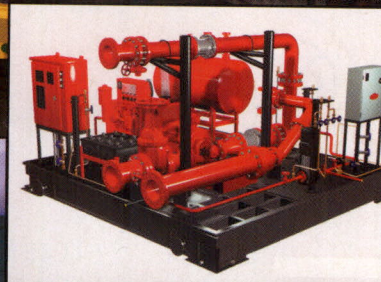


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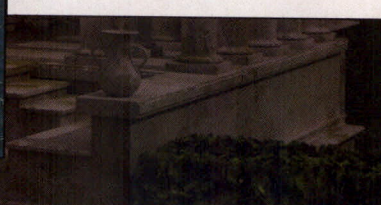
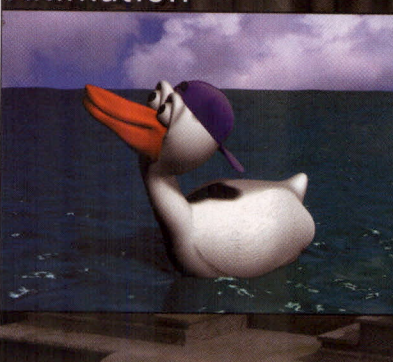
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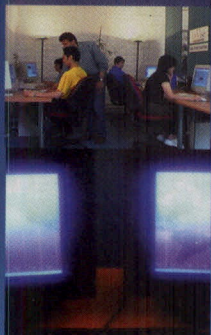
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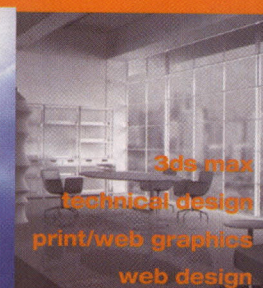
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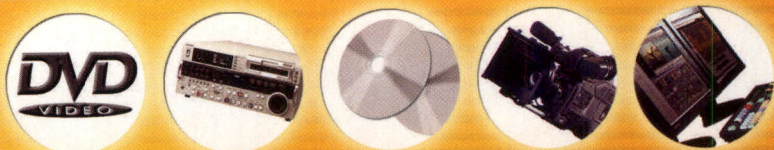
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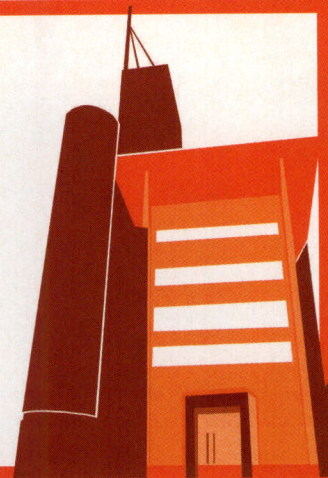
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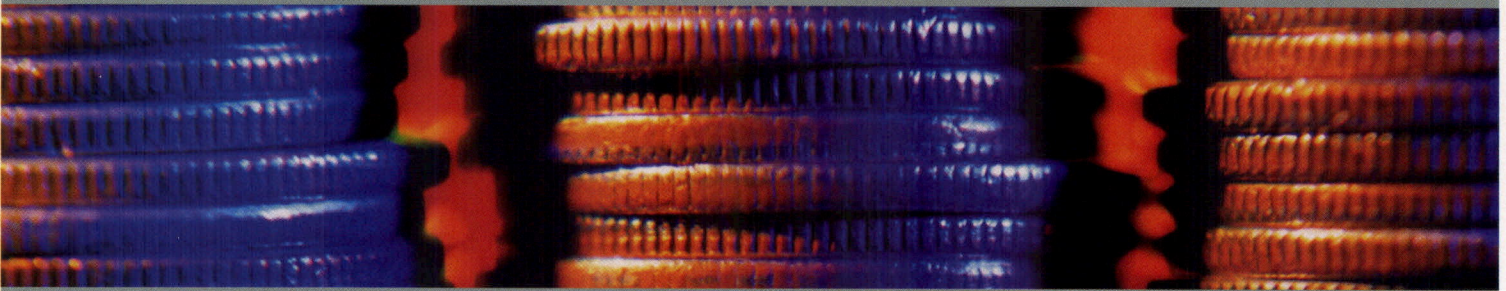


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# BUSINESS END



Each issue, our panel of experts answer the legal and financial questions of independent artists. This month's column concerns...

## My work on their demo reel

**Q** I've recently joined a small start-up animation studio. A company demo reel has been made and sent out containing some of my own previous work. Should the studio fall through, or should I leave in the near future, how can I make sure that this personal work won't continue to be used to promote the company?

SHARK BOY, VIA THE FORUMS

**A** It's often tempting at the start of a new venture to allow your new partners to use your previous work to promote their business. It happens all the time and, understandably, until you win new business of your own as a new venture, it's the only way for you to establish your credentials in a crowded marketplace. However, whenever you allow others to use your work (and you should think of the studio as being 'other' than yourself), always state the terms on which you allow that use. Any such use of your work (without the express assignment of the underlying copyright and related rights in the work) is called a licence. This should state the extent to which the company can use your material, together with the period of time for which such use can be exercised. You should also specify the territories in which you're happy for the work to be used.

I've recently looked at moral rights in this column and I'll refer to them now in brief. Moral rights are your rights to be identified as the author of the work, and also to object to any derogatory treatment of the work, such as any amendments or alterations to it that you consider reduces its impact or value as an entire work. These rights should also be specified in any licence, so the studio is clear that it's taking the licence subject to these rights and that they must be complied with. Moral rights cannot be assigned from their owner to another legal entity. However, they can be waived. This means that you would agree not to enforce them. In the current circumstances, that wouldn't be a wise thing to do.

However, always remember that the rights you deal with are only as good as the rights you have in your work. In what circumstances did you create the material? If you were a full-time employee at the time at which you created the work, the copyright in it will belong to your former employer. Also, check your employment contract. You may well find that you waived your moral rights in relation to all work carried out while you were employed. Practically, this means that you wouldn't have any right to be identified as the author of the work, and neither would you be able to prevent any derogatory treatment.

If you did create the work while you were an employee, you should also consider that the copyright and related rights in the work don't belong to you. You should then ascertain the basis on

which your former employer allowed you to continue to use the work in your portfolio after your employment ceased. It's typical in the 3D industry for designers to be able to use the material in portfolios when pitching for work and nothing more, and this could reasonably be said to be an implied licence of the copyright and related rights in the work. However, any further use by you is likely to be a breach of the terms of any such licence. Similarly, granting a third party a right to use the work in relation to its business is very likely to be a breach of the terms of such a licence.

Practically, you should agree in writing the circumstances in which the studio and may not use the work - for example, that upon your leaving, it ought to cease using the work to promote its business. As an aside, you could also point out that if the studio induces a prospective client to enter into an agreement on the strength of work carried out by you prior to your joining the studio, it will constitute a misrepresentation. This means that the client has been duped into entering into an agreement on the strength of an untrue statement (that the studio was involved in the creation of work that was done in your previous employment).

### ALWAYS STATE THE TERMS ON WHICH YOU ALLOW YOUR WORK TO BE USED

If the client can show that it was your previous work that induced them to enter into the agreement with the studio, they can bring an action for damage suffered by them as a result of entering into the agreement.

This need for clarity cuts both ways. You should also be very careful not to do or say anything to suggest that work carried out while you were employed with the company - or, worse still, that was actually carried out by anyone else at the company - is your own personal work.

If you've left the studio and are concerned that it's continuing to use your material, you should ask it to confirm that it's no longer doing so. If it refuses to do this, or if it does so but then continues to use the work, it's time to get some specialist legal advice.

Lee Gage is an intellectual property solicitor at leading media and entertainment firm Harbottle and Lewis LLP. He advises creative businesses on all areas of IP and IT law issues [www.harbottle.com](http://www.harbottle.com)

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# Making 24: The Game Part Three

As 24: The Game continues to make steady progress, SCEE Cambridge's Studio Communications Manager, Mark Green, lifts the lid on its postproduction phase

**L**ast month, we left things just as we were about to embark on postproduction. This is now well and truly underway, with approvals being signed off left, right and centre.

The cutscenes, for example, are approved at several stages. The first pass required all correct locations and characters in place and initial camera positions set up according to the storyboard. This gave us a completed animatic to review. The second pass involved putting the mocap and facial data to the characters. Once the correct props were added, the cutscene was then considered finished, and all that was needed was a bit of polish to improve lighting and facial data. This is where we are now.

The final phase is more like a cinematic lighting pass on the scene to enhance and add depth to the characters. Lighting can

also be used for dramatic effect when little or no action takes place. All of the lighting pass is done in *Maya* and exported through the game engine. The absolute final pass on the scene is completed in *After Effects*. This controls colour temperatures and also brightness levels in the scene. It gives a consistency throughout the cutscenes and helps to mimic the style used in the TV series.

Lighting in *24: The Game* is very important, and we've tried to match the bold techniques used in the series. The show is well known for its strong filtered effects and use of coloured lighting for each environment. This helps set the atmosphere for most locations and provides contrast when multi-panelled windows are used. It also helps the viewer distinguish between varying locations.

To get this right, we initially discussed lighting in detail with Rodney Charters, the Director of Photography on 24. It was fairly straightforward copying the show's techniques on lighting – the basics are easy to follow: blue theme for the Counter Terrorist Unit (CTU), yellow/green for terrorist cells, and warm tones for daytime

exterior shots. Interrogations tend to use just a single light source, generally from the side or even below. Most indoor lighting is from side lights to give depth to the characters and make them stand out.

## GOING BETA

The approvals process is ongoing, from the actors approving their models in-game, to Fox approving the final Cold Master. As always, the most contentious and difficult things are the smallest and most subjective: 'exactly how blonde should such and such a character's hair be?' and so on.

Audio is another big part of getting the game to synch with the series, especially as so much attention has gone into the show's

sound design. Once we get a movie from the animators with rough dialogue on it, we 'spot' the sound effects. This means that we basically watch the movie through

and make notes on all the sound effects/foley that are likely to be needed, as well as how the music and subjectives should work for each and every scene.

Once we've compiled a list of everything we think is going to be needed, the work is split up into separate tasks, including dialogue, spot FX, foley, music and subjectives. The different tasks are given to various team members, who then slowly build up all the component audio needed. Once all the parts have been recorded and edited, they're brought together in *Pro Tools* for the final mix.

It's around now that we finally hit the beta stage. The criteria for going beta are quite simple, yet deceptively difficult to hit, in that your game must, essentially, be finished. The testers must be able to complete the game without any bugs blocking the way. All the content must be in and the only leeway you tend to get is on the more superficial elements. Movies, for example, absolutely must be in with final audio mix, but you might get away with English-only rather than all the localised versions. Some fatal 'A' class bugs will still be

TESTERS MUST COMPLETE  
THE GAME WITHOUT ANY  
BUGS GETTING IN THE WAY

## IN OTHER ISSUES

### ISSUE 70 PRE-PRODUCTION

Voice casting, face modelling and early animation tests

### ISSUE 71 PRODUCTION

Pre-production over, the 3D team gets to work

### ISSUE 73 MARKETING

The release date beckons... Will *24: The Game* be a hit?





## TIMELINE

22/09/05

Cutscene timing lockdown

6/10/05

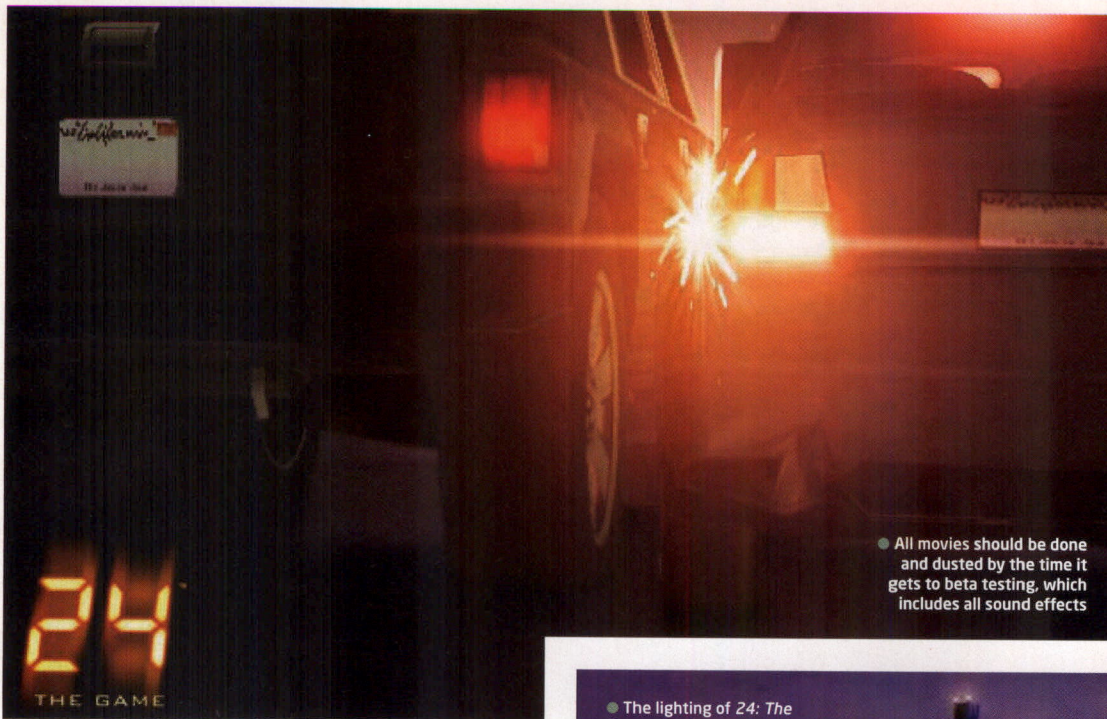
Art geometry lockdown

12/10/05

In-game lighting lockdown. This is quickly followed by: cutscene lighting and effects completion; code lockdown; and final foley and music mixes created with English versions of the cutscenes. All in all, a busy week.

17/10/05

Beta submission



present, and a host of non-fatal 'B' and 'C' class bugs. But the game is done, even if the gameplay still needs tweaking and balancing!

After beta acceptance, there's another 8-10 week phase dedicated to fixing bugs. All content is locked down and the entire aim is to make sure the game is totally stable. This is in the run-up to Master. Master submission is a tense period when you send your game off in the hope that the testers can't break it. They go 'radio silent' for a couple of weeks before pronouncing their verdict. It's not

uncommon for there to be two or even three Master submissions. TRC (Technical Requirement Checklist) bugs are the bane of every PS2 developer's life. There are a set of rules that all PlayStation games must adhere to – down to exactly how a particular piece of hardware is referred to – and you can't break these. It's amazing how many little things slip through the net and you get hauled back in for the most innocuous bug. After that, the game goes off to DADC for disc replication, and there's another three to four week phase as the game is manufactured and distributed to stores worldwide.

**Next on Making 24: The Game ...** you've made the game, now you've got to sell it to the world. Jack Bauer's highly-trained marketing squad rolls into action!

### STOP PRESS

● As *3D World* went to press, SCEE informed us the release of *24: The Game* has been pushed back to March 2006. Whether this means Jack Bauer's crack SWAT marketing team can hit *3D World's* next issue deadline remains to be seen. Stand by for the next installment...

*24: The Game* is being developed for PlayStation 2 by SCEE's Cambridge studio. More information can be found online at the URL below.  
[www.24-thegame.com](http://www.24-thegame.com)





● A still from *Peril on Akryls*. This scene is so complex, it requires a machine with a minimum of 2GB spare once LightWave is running

# Yann Couderc

A final-year project at university has been turned into a fantastic ride called *Peril on Akryls* at the Futuroscope theme park in France. We talk to one of the animation's creators

BY BEN VOST



● The herds of flocking wee beasts in *Akryls* were completely controlled through LightWave. No need for an external crowd simulator!

## Could you tell us a bit about yourself?

I discovered 3D about 10 years ago. At the time, I was still at secondary school and it was just a hobby, but I quickly realised it was what I wanted to do for a living. After having done a year of an architecture course, I decided to enrol at [major French animation school] Supinfocom so that I could learn about the big 3D packages of the day that ran on SGI machines. But that was at the end of an era, and soon afterwards, everything was ported to Windows machines and they made me use *3ds Max* ... but I stayed with *LightWave 3D*! Xavier Henry [Yann's partner on *Akryls*] found himself in the same boat as me and we decided to make *Akryls* in *LightWave*, which was a good choice. After that, I was a lighting artist at Duran for a year working on *Immortel Ad Vitam*, one of the first films to use virtual sets, before working on *Peril on Akryls* for Futuroscope with Xavier at Paris's Cube Creative Computer Company.

## What's your favourite part of LightWave?

The render engine. It allows you to get absolutely beautiful images with very little render time. Even so, it has a reputation of being slow. In fact, everything depends on how it's used – its pass-based antialiasing system means that you can get a whole range of effects with a bit of trickery, such as using motion blur for shadows to simulate area lights.

If you use nothing but area lights to light your scene, you can end up with very long render times. But in using the pass system with these tricks (which allow you to simulate anything from blurred refractions, such as those an area light would create, through to cloud effects, all without bumping up render times) you can get a fast final render, even in heavy scenes, with excellent 3D motion blur.

## What sort of machine are you using for LightWave?

At home, I have an old Pentium 4 1.9GHz with 1GB RAM – it's one of the three machines we made the original *Akryls* on. At work, I generally use a dual Xeon 3GHz machine with 2GB RAM.

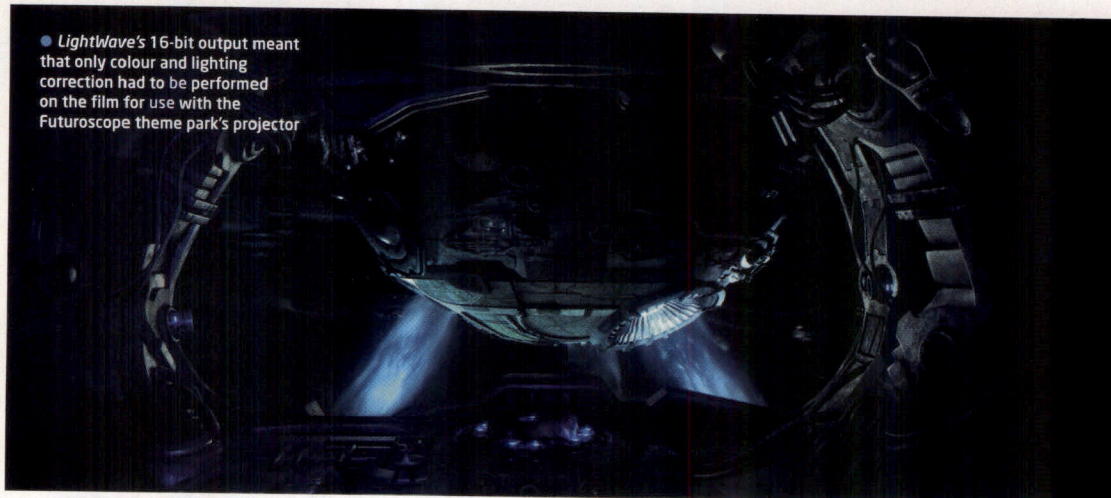
## Are there any plug-ins you wouldn't be without?

*FPrime*. Even if I only use it for previews, it gains the user an unthinkable amount of time to prepare for a render.

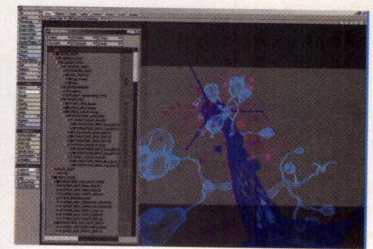
## So what's the history behind Akryls?

It started with the final-year film that Xavier and I made. It was a project where we were free to choose what we did, and so we put ourselves in this universe based on the forms you see through a microscope. Each of these forms was a starting point modified by our imagination and inspiration, until they were ready to take their places in the *Akryls* universe. The name *Akryls* itself was likewise





● LightWave's 16-bit output meant that only colour and lighting correction had to be performed on the film for use with the Futuroscope theme park's projector



● The heart of Akryls' power supply. In the film, it's in constant motion and surrounded by a mix of aquatic and airborne animals



● After a fraught but successful mission to discover the cause of the lack of power to the system, the three pods are towed back to base

created from a combination of the names of several of these microscopic creatures.

### Were your inspirations for the city and the vehicles the same as for the other forms?

Yes, the starting point for finding these forms was the microscopic organisms, and that's why the shapes are organic, even though the detail is more mechanical. From that starting point, we were led by our influences without trying to emulate anything in particular.

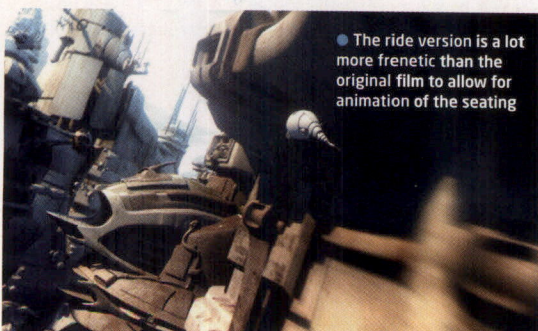
### Were you asked by Cube to provide a film for Futuroscope, or did you propose it?

It was Cube that contacted us. The idea was germinated in their first viewing of our short film, and they contacted us while I was working at Duran on *Immortal*. Little by little, we got organised and started work on the project.

### What are the differences between a 70mm ride film and one intended for computer or video screen use?

There are quite a few. From the start, the content is different – the principal attraction of a ride film is the movement given to the seats to duplicate the camera movement in the film for the spectator. Therefore the animation has to be created for maximum impact, so we needed to make the film more dynamic than our first *Akryls* movie, which was, after all, something of a mood piece.

When all's said and done, the two films are fairly different, even though the visual approach is similar. The image format of the second film was much larger, so objects had to be more detailed, which made for heavier scenes that took longer to render at a higher resolution. Film can handle a much wider range of lighting



● The ride version is a lot more frenetic than the original film to allow for animation of the seating

conditions than video can, as well. On the computer monitor, if we corrected the image the same way as we would for projection, you would see no detail in the shadows or really bright spots. This means that we end up with a very flat image upon which you have several different luminosity curves depending on the part of the image you're working on. To compare it with sound, it would be a bit like composing a soundtrack with small living room speakers and having to constantly adjust the volume to compensate for the difference in power between those speakers and those required for a cinema hall.

### How big were the images for the first Akryls compared to the new one?

The first *Akryls* was rendered at 720x434 in 8-bit colour. For the new one, we tried 3k and 2k and didn't really see the difference at projection time, so we went with 2k images in 16-bit colour.

### How long did the new version take to make?

It took almost six months of production. In total, eight people worked on the film. The team consisted of between two and six people at any one time.

### Did you use 2D or 3D storyboards at all?

Hand-drawing a storyboard for a ride film is inefficient. Unlike a normal film that contains a series of scenes, there's only one scene and the camera is moving constantly. Therefore you would need a vast number of storyboards to understand how the film will work.

So we made a storyboard from quick animations made in *LightWave 3D* and then finished in 2D. The storyboards for both films were made this way, which turned out to be rather more efficient. At the same time, we had drawings that showed the different 'scenes' and elements from the film that weren't detailed in the storyboard.

Afterwards, we made a 3D animatic so that we could get a feel for the rhythm of the film, the overall motion of the camera and the proportions of the main objects.

### What are you working on at the moment?

I've just finished a rendering job for an ad. It was a *Maya* project with loads of animated elephants that they gave me to render, so I decided to do it in *LightWave* thanks to [data-exchange plug-in] *Point Oven*. It was the first time I used this converter and it performed excellently. ●

### MORE INFORMATION

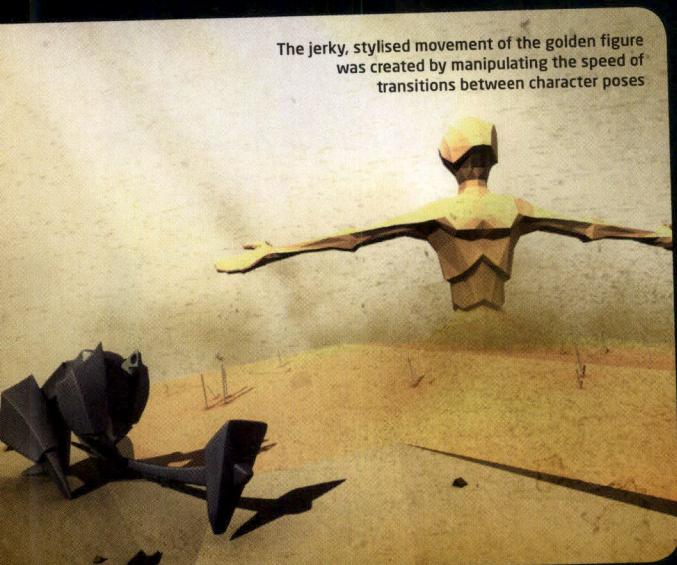
You can see the original *Akryls* at <http://akryls.free.fr>, but to experience the ride film, a visit to Futuroscope is in order: [www.futuroscope.com](http://www.futuroscope.com)

### ABOUT THIS ADVERTORIAL

This story was created by NewTek Europe in partnership with *3D World* magazine. Read the full version in the Community section of the NewTek website at [www.newtek-europe.com](http://www.newtek-europe.com)



The jerky, stylised movement of the golden figure was created by manipulating the speed of transitions between character poses



Theros is constructed around oppressive rhythms, abstract shapes and loosely represented figures



## SHOWREEL



### THE PITCH

#### SYNOPSIS

An oppressively physical portrait of how the building of human civilisation rips itself and the Earth apart

#### LOOK OUT FOR

- 0:09 The giant statue comes into view
- 0:40 Camera pans back to reveal hundreds of workers
- 0:59 The wonderful sky, possibly inspired by another short film, *Loop*
- 1:03 A sudden change of colour and texture
- 1:48 The rising city
- 2:00 Power of 10 shot as the screaming face of the planet is revealed

#### SEE ALSO

- *Chrysalide* (Damien Serban and Yann Bertrand)
- *Grau* (Robert Seidel)
- *Loop* (Julian Rancœur)

## THEROS BY GEORGIOS CHEROUVIM

Georgios Cherouvim uses semi-abstract visuals and muscular animation in this pessimistic, yet impressive portrait of the human condition

**A**bstract animation is a phrase to make many people shudder, conjuring up monstrosities like the *Worker and Parasite* cartoon glimpsed in a *Simpsons* episode. For Georgios Cherouvim, the medium frees the imagination, and inspired him to create muscular animation for a film revealing human progress as a passage of aggression and mutilation. It's heavy and oppressive, yet thrilling to watch.

"After five years of using 3D software, I'm not easily impressed by photorealism," says a forthright Cherouvim. "Realism isn't important to tell a story and visualise an idea. Why limit yourself to the real-world look? One of my initial aims was to emphasise the artistic side, creating a stylised animation."

*Theros* was Cherouvim's third-year major project during his computer animation course at the NCCA of Bournemouth University. Did the course influence his style? "I can't say that, but it definitely gave me opportunities. Before I joined the course, I had no artistic background. From life-drawing sessions, visits to galleries, library resources and tutors, I realised there were all these non-technical approaches I needed to try, in order to make an image or an animation more interesting."

Beyond its imaginative appeal, the stylised animation of *Theros* has practical advantages: "The film's subject would have been too hard to express in photorealism. I wanted to avoid complex scenes, objects and character rigs. Because I didn't

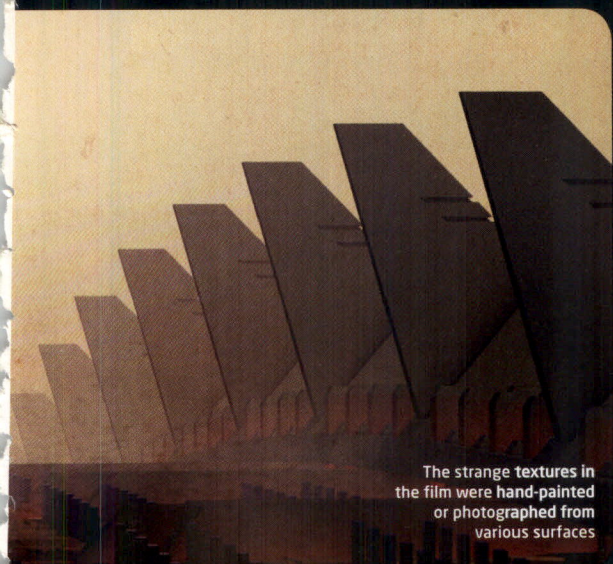
have to worry about high-res models, or rigs and skinning which would be hard to set up, I could create many different sets and figures. However, that didn't make the modelling easier, as everything had to look clean and consistent to create a unified result."

The animation in *The Wall* was an obvious influence on Cherouvim's film. "I saw it years ago, and what impressed me was its rhythmic and repetitive animation. I wanted an animation where sound and picture merged to create something more powerful. I could have had a bit of variety in the workers' models or their animation but, in the end, I chose to make them identical, acting like a bigger entity. This helped preserve the beat through the piece. I wanted a soundtrack with a clear beat, yet one that also had noisy digital sounds. Thankfully, my brother composed and engineered a piece on top of my edited animatic, which enhanced the atmosphere and helped unify the piece."

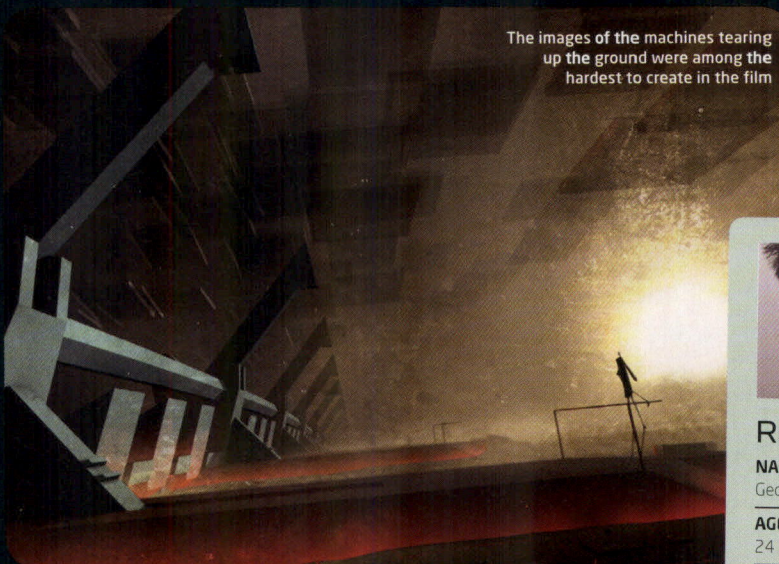
### ALL IN THE CURVES

The film begins with an image of a golden giant half-buried in sand. (According to Cherouvim, it represents humanity in its purest form.) "While I was working on the animatic for the opening, I started planning the character's key poses with stepped animation curves which made the figure jump from one pose to another. I found doing that created a nice contrast between him and the smooth movement of the worker in the

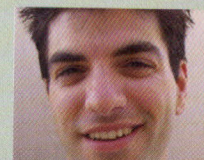




The strange textures in the film were hand-painted or photographed from various surfaces



The images of the machines tearing up the ground were among the hardest to create in the film



## RESUME

### NAME

Georgios Cherouvim

### AGE

24

### WEBSITE

www.ch3.gr

### BASED

London

### CAREER HISTORY

- 2002-2003  
BA (Hons) Computer Animation and Visualisation, National Centre of Computer Animation, Media School of Bournemouth University
- 2003-2004  
PAL leader (Peer Assistant for Learning), giving a supporting lecture to the first year students of the BA Computer animation and Visualisation course.
- 2005  
Junior TD on X-Men 3 at MPC, London

foreground. I looked for a method of animating the character like that in a more polished way."

Cherouvim tried five different ways to achieve a satisfactory result, but most looked like unfinished animation. "The way it was achieved in the end was to set up all the poses with smooth animation curves that were almost evenly timed. Then I connected my own time variable to the curves, so I could change the animation speed, adding another layer of control. It was like scratching a turntable and listening to a track at various speeds, even backwards."

## SHAKING IT UP

A shot of machinery cutting the ground was also hard to build. "It took more than five time-consuming attempts to set it up efficiently, so it was easy to tweak and fast to render. In some cases, I spent days perfecting effects not noticeable in the final result. Duplicating objects, especially the workers in the first shots, was something that took a lot of research. I used Particle Instances extensively, as they were the most efficient way to duplicate objects in *Maya*. On the other hand, it made the particles hard to control and required a set of tools and MEL scripts, so I could place and orient each instanced object and tile in each scene."

Throughout the film, there's dust, debris, drops and splashes of blood, and harsh light. "The final look was created in postproduction using *Shake*," explains Cherouvim. "The first step was to darken the borders of the frame and lighten the area of interest a bit, to create depth and guide the viewer's eye. Most textures are photos taken from various surfaces; others are hand-painted images. After I processed them a bit, I put them on top of the beauty pass, using various blending functions. The idea was to end up with a 2D/3D look, rather than just pure 3D.

In the middle of the production, I decided not to use textures at all for the 3D models. Most of the shaders are simple Blinns and Lamberts, so I needed to add the extra detail in post. To be honest, I was planning to add more 2D effects and textures, especially for the last sequence, but I ran out of time because of the deadline."

Still, with Cherouvim keen to make more 'personal' animation in future, it sounds like a great starting point for his next film. ●

## WATCH THE MOVIE

You can see *Theros* on Georgios Cherouvim's website at [www.ch3.gr](http://www.ch3.gr) under 'animation'.

# "AFTER 5 YEARS OF USING 3D SOFTWARE, I CAN SAY THAT I'M NOT EASILY IMPRESSED BY PHOTOREALISM."

GEORGIOS CHEROUVIM, CREATOR OF THEROS

## FACT FILE

- **Title:** *Theros*
- **Running time:** 2 minutes, 38 seconds
- **Budget:** N/A (made on college equipment)
- **Funding sources:** National Centre of Computer Animation, Bournemouth
- **Time taken:** 8 months
- **Software used:** *Maya*, *Mental Ray*, *Photoshop*, *Premiere* and various freeware programs (including *Cygin* and *VirtualDub*)
- **Hardware used:** Dell Intel Dual Pentium 4 and AMD Pentium 3 1.5GHz PCs
- **Public screenings:** Global Student Animation Awards

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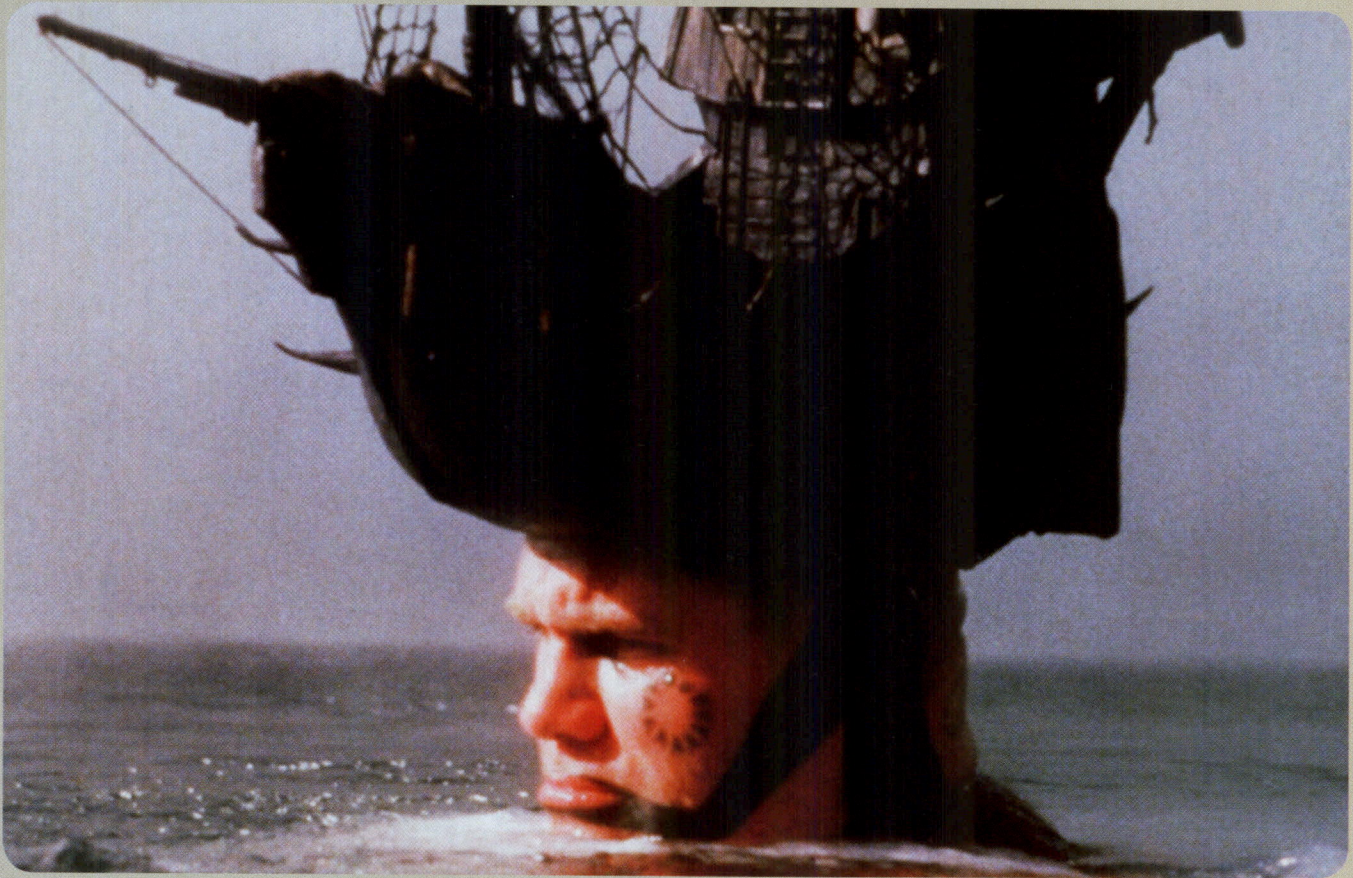


Image © Kobal

# INSPIRATIONS

Visual Effects Supervisor **Jon Farhat** recalls director Terry Gilliam's kaleidoscopic imagination in fantasy-adventure classic *Time Bandits*



"**TIME BANDITS IS** such an artistic, funny and satirical film poking fun at everything and everyone throughout history. I'm something of a history buff, so to see history presented in this way is a thrill for me. The

sacrilegious depiction of God in the film is just fantastic and shows an entire disregard for tradition.

"What I love most about the film is the band of great characters that have to struggle together. They make it really quirky and very funny. I love the characterisation and visually it's so entertaining. Mrs Ogre is brilliantly played by Katherine Helmond, and the ship is truly fantastic. My favourite scene is probably where they finally meet God; the way he's depicted is just great.

"[The film] enabled me to fully understand the concept of story, hero and myth. I used to think telling stories was simply painting a picture, and in many ways

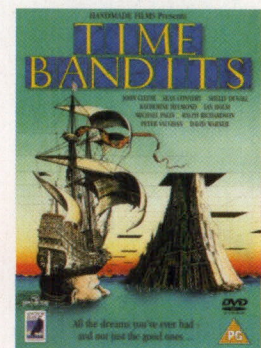
it is, or making a short or a gag. I think *Time Bandits* is what took me beyond the gag to the actual start, middle and end transition of a story.

"I first saw *Time Bandits* at a time when I was deciding whether to try and break into film. I was working as an art director in an ad agency but I decided making movies and telling stories was what I wanted to do. I jumped ship and went to work for a company called Dream Quest Images where they happened to be working on a couple of films called *Total Recall* and *The Abyss*.

"Terry's animation was certainly the first thing I really started to try and emulate [in my own work] because it's so artistic. I've since had the chance to meet him in person and he just bowled me over."

**Jon Farhat is an Oscar-nominated visual effects supervisor who recently supervised the VFX on *Doom***  
<http://tinyurl.com/avmhh>

● In a Monty Python-esque moment, a giant submerged in the ocean lifts the ogres' boat as a hat in Terry Gilliam's *Time Bandits*. It creates one of the most unexpected entrances in film history



## SEE FOR YOURSELF

*Time Bandits* was first released in 1981 and is now available on DVD from Criterion and Anchor Bay at most DVD outlets  
[www.criteriondvd.com](http://www.criteriondvd.com)





## LipSync Master LE

### Full product

**PC** Take facial animation to the next level with this innovative lip-synch package

**LIPSYNC MASTER** is a versatile lip-synch tool that enables you to import dialogue as text and audio files and generate matching phoneme curve data for export to major 3D applications (*Cinema 4D*, *LightWave*, *3ds Max*, *Maya* and *XSI*). Provided you have a prebuilt character model for which blend shapes have been set up, the result is instant lip-synch animation, without the need to keyframe every mouth position by hand.

However, *LipSync Master* can do far more. In the tutorial on page 52, you'll discover how to use the same phoneme data to make the gecko character (displayed here) change colour - or even tap his foot - in time to the dialogue. Further video tutorials and supporting resources can be found on the disc.

The learning edition of *LipSync Master* included on this CD exports a reduced set of nine phonemes, and is limited to animation clips under 15 seconds in length. Certain other restrictions also apply. For full details, consult the features manual on the disc. To upgrade to *LipSync Master Professional*, which exports an expanded set of 39 phonemes, and to claim a special 20 per cent reader discount, turn to page 56.

The software must be registered online before you use it, at: [www.letterboxanimationstudios.com/Registration](http://www.letterboxanimationstudios.com/Registration). *LipSync Master LE* is also licensed for personal use only. This licence doesn't allow for commercial production. Nor does it include technical support services from Letterbox Animation Studios staff available for the *Lite*, *SoHo* and *Professional* versions.

[www.LetterboxAnimationStudios.com](http://www.LetterboxAnimationStudios.com)

### FACTFILE

**FORMAT**  
PC

**MINIMUM SYSTEM**  
Windows 2000 / XP,  
1GHz processor,  
256MB RAM

**DEVELOPER**  
Letterbox Animation  
Studios

**WEBSITE**  
[www.Letterbox  
AnimationStudios.com](http://www.LetterboxAnimationStudios.com)

### USING THE CD

#### GETTING STARTED


On a PC, this CD should *autorun* when inserted into your CD drive. If not, run *3dw.exe*. To toggle *autorun* on and off, use the Control Panel on your computer. On a Mac, choose *3DWClassic* or *3DWiOSX* to suit your operating system.

#### USING THE INTERFACE

The disc interface requires Windows 98, Me, 2000, XP or Mac OS 8+. You'll also need an active Internet connection to make full use of the interface. For best results, ensure you're using a version three web browser or better.

#### POINTS TO NOTE

- Some software may require free registration over the Internet or by phone
- Some software may not be available in all territories
- Values quoted are the original prices for which the software was sold (including packaging and manuals).



## ZBrush 2

### Exclusive demo plus bonus resources

**PC/MAC** New demo of the popular modelling app, with plug-ins and training

**USE THIS TRIAL** version of Pixologic's popular modelling package to follow the exclusive tutorials from 3D legends Meats Meier and Zack Petroc printed in the magazine this issue. This is the first time the *ZBrush 2* demo has appeared on a magazine CD. Bonus training, including a video recorded by Meats Meier himself, can be found on the disc. The CD also includes two new *ZBrush 2* plug-ins: the self-explanatory *Displacement Exporter* and *ZApp Link*, for interoperability with common 2D image-manipulation software.

To run the software, drag the folder (PC: *ZBrush2 Demo*, Mac: *ZBrush2 MacDemo*) to your hard drive and double-click the application (PC: *ZBrush2 Demo.exe*, Mac: *ZBrush2 Demo*). You'll need to register the demo before use. To do so, visit: <http://pixologic.com/download/contents.html>

Important note: as the demo doesn't permit import or export, we've included supporting files for the tutorials in native ZTL format. When a walkthrough instructs you to import an object, use Tool > Load instead.

[www.pixologic.com](http://www.pixologic.com)


### FACTFILE

**FORMAT**  
PC / Mac

**MINIMUM SYSTEM**  
Mac OS X 10 or  
Windows 98SE,  
256MB RAM,  
200MHz processor

**DEVELOPER**  
Pixologic

**WEBSITE**  
[www.pixologic.com](http://www.pixologic.com)



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**ZBRUSH 2 (DEMO)**  
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 Magazine contents: page 4

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**THIS IS A FUTURE TECHNOLOGY CD-ROM.** This disc has been thoroughly scanned and tested at all stages of production, but - as with all new software - we still recommend you run a virus checker before use and have an up to date back-up of your hard drive. While every

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